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AND AMERICAN GARDENER'S MAGAZINE.

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NEW PUBLICATIONS.

Quarterly Journal of Agriculture—and the Prize Essays and Transactions of the Highland Society of Scotland. No. XXI—June, 1833.

This work appears to embrace all those subjects that relate to the practical operations of rural life, and that are calculated to develope the physical resources of the country, in connection with the moral health and energies of the people. The prize essays are the productions of the farmer, the mechanic, and the more learned professor. We shall furnish our readers with extracts and abridged notices.

Stipends, Manses, and Glebes of the Clergy of Scotland.—From this article we learn that provision for the established Church of Scotland is on more judicious and happy principles than that for the support of the Church of England—that "the greatest extent of efficient service is obtained at the least possible expense to the country; and the funds for that expense are levied in a way the most satisfactory that can be devised."

Irish Agriculture.—Although the soil of Ireland is pre-eminently rich, the population numerous and hardy, the internal resources, and the facilities for markets great, yet through the dislike of innovation, from a rooted prejudice in favor of old systems, the want of unanimity, confidence, capital, and resident landlords, and from constant political and religious feuds, Erin, beautiful Erin, is rendered a land of scarcity and woe,

"—— where law secures not life."

It is a pity that these causes should have terminated the existence of the society mentioned below:

District societies had started in many parts of Great Britain, and, grounded on their good example, the Farming Society of Ireland was established in the year 1800, under the auspices of the chief nobility and gentry of the land, amongst whom the titles of Oriel, of Sligo, and of Meath, and the names of Wynne, of Beresford, and of Grierson, with others equally zealous, should never be forgotten. This was the dawn of amendment—the date of the first introduction into Ireland of good implements, improved practice, and superior stock. That society is now no more! When the patriot and political economist contemplate the scope of its labors, the practical and comprehensive detail of its operations, and contrast in all its bearings the state of agriculture previous and subsequent to the institution of that society, they will acknowledge the wisdom, the energy, the incalculable benefits of its exertions, and will sanction the honest tribute to its memory, which exists in the regret and gratitude of the country.

At that time the district in question stood higher than almost any other in agricultural reputation; and in its vicinity the ploughing matches of the society were generally held: an extensive and eminent Fingal farmer, with the old Irish plough (a vile tool), and four choice horses, challenged a Scotch ploughman with a pair, and was beaten. He had the good sense to adopt the Scotch plough, and continue to use it. A few prudent farmers followed his example, but, in general, the unwieldy old plough is that which is in use here to the present day.

The improvement in the crops is attributed in a very considerable degree to a gradual substitution of old for more modern implements. Much improvement could not have been expected under the following first method of cropping:

Formerly, the rotation practised was,—first year, fallow; second, wheat; third, oats; fourth, oats. *At present* it is thus—first year, fallow; second, wheat; third, oats with clover; fourth, clover. Sometimes inverting the two latter crops and proceeding to fallow again.

The introduction of clover as an intermediate and ameliorating crop cannot be expected to obviate the effects of the waste of horse labor:

The clumsy plough, though in some degree improved, as has been mentioned, effectually resists the power of a pair, and must be dragged by four horses at least in the lightest ploughing, and in general by six. These are of a shabby description, ill-fed and lean, inadequate to heavy work, to which many of them fall victims. An extensive farmer here, on 350 acres, plantation measure, of which he may, perhaps, have 150 under the plough, is in the habit of keeping from 30 to 40 horses of this kind, and of losing 1-3d of the number every year by poverty and overwork. This must be a sad drawback; for though the metropolis frequently furnishes a cheap mart for cast-off horses, yet, in the winter, they must be fed on something besides grass, and the farmer's profit must sink in proportion to their numbers. Here then is a disgraceful feature in agricultural practice, only to be equalled by the rude and discreditable harness with which the miserable team is yoked: halters of cord, collars and backbands of twisted straw! this, too, not only here, but close to the metropolis, and in the immediate vicinity of many gentlemen, whose well cultivated demesnes are worthy of farming imitation. But, alas! where slovenly habits prevail, capital is seldom known to exist. With the middling class of occupiers, this want creates a never ceasing struggle; if able to pay annually the demands upon the land, and to keep their families supplied with meal and potatoes, they consider themselves fortunate. Few are able to do so, and in general a heavy arrear of rent hangs over them.

This picture is painful; and who, that reads the above paragraphs, can doubt the utility of agricultural associations, and hesitate to give them his cordial support?

Smut in Wheat.—This article, by Mr. John Donaldson, details the various and contradictory opinions of the origin of this disease. Salt is used as a preventive. Tull states that the practice of steeping wheat in salt and water was derived from sowing wheat taken from a vessel sunk near Bristol. In the south of Scotland, and the north of England, stale urine, free of any mixture, is recommended for the same purpose. The Messrs. Culley used it for forty years without having any smutted wheat. Our readers may draw their own conclusions from the subjoined experiments:

		Sound Ears.		Smutted.		Sound Ears.		Smutted.
No. 1.	Wheat sown without any preparation,	produced 866	and	2	—in the proportion of	433	to	1
2.	400 grains of Wheat, impregnated with smut powder, and sown without any preparation,	" 210	"	463	"	" 1	"	2
3.	400 do. impregnated with smut powder, and washed with chamber-ley,	" 560	"	106	"	" 5	"	1
4.	400 do. impregnated with smut powder, and prepared with chamber-ley, and limed,	" 700	"	60	"	" 11¼	"	1
5.	400 do. impregnated with smut powder, and steeped in arsenic and water, and limed,	" 600	"	44	"	" 14	"	1
6.	400 do. impregnated with smut powder, and rubbed with dry arsenic,	" 538	"	146	"	" 4	"	1
7.	400 do. impregnated with smut powder, and steeped in vitriol and water, and limed,	" 635	"	40	"	" 16	"	1
8.	400 do. impregnated with smut powder, and steeped in copperas and water, and limed,	" 205	"	445	"	" 1	"	2
9.	600 sound grains picked from a badly smutted crop in the neighborhood, and sown without any preparation,	" 612	"	53	"	" 11½	"	1
10.	600 do. do. impregnated with chamber-ley, and limed,	" 737	"	16	"	" 47	"	1
11.	200 do. do impregnated with smut powder, and sown without any preparation,	" 67	"	375	"	" 1	"	5
12.	200 do. do. impregnated with smut powder, and prepared with chamber-ley, and limed,	" 374	"	43	"	" 9	"	1
13.	200 do. do. impregnated with smut powder, and steeped in arsenic and water, and limed,	" 443	"	44	"	" 11	"	1
14.	200 do. do. impregnated with smut powder, and rubbed with dry arsenic,	" 317	"	43	"	" 8	"	1
15.	200 do. do. impregnated with smut powder, and steeped in vitriol and water, and limed,	" 430	"	40	"	" 11	"	1
16.	200 do. do. impregnated with smut powder, and steeped in copperas and water, and limed,	" 260	"	190	"	" 1¼	"	1

We should suppose the oats of the following extract were worthy of notice:

Lately has been introduced by one person, the black oat of Hungary, received through the importer from an eminent seedsman at Paris. It has this year returned thirty barrels by the acre, where but one barrel had been sown, and that upon land which had borne oats the preceding year. This is a thin-skinned oat, not liable to shake, and ripens early. The straw is abundant, the height nearly five feet, and so strong in the stem as not to be beaten down by bad weather. From seventy to one hundred and fifty grains was the general produce of each ear. This oat is much sought after at present for seed, and will probably come into general use. The return of barrels by the acre, in this district, varies according to the previous preparation of the soil. Where

oat crop follows wheat that has been grown on fallow, the produce seldom exceeds from twelve to fourteen barrels by the acre. Where it follows wheat that has been sown on potato ground, it yields from fifteen to eighteen barrels, and, when sown immediately after potatoes, it will return from twenty to twenty-five barrels by the acre.

DE CANDOLLE'S THEORY OF THE ROTATION OF CROPS.—This is a beautiful theory—beautiful, because it bears the impress of truth, or, rather, is the mirror of nature:

Various reasonings have hitherto been employed by men of science to account for the necessity of a rotation of crops. It has been thought sufficient to explain all the phenomena to state, that different plants absorb different juices from the same soil, and, therefore, though the ground may be exhausted by one class of vegetables, it may be rich enough for another. But it is well known to botanical physiologists, that plants absorb all the soluble substances which the soil contains, whether injurious to their growth or not.

Brugmans stated, that a portion of the juices which are absorbed by the roots of plants are, after the salutiferous portions have been extracted by the vessels of the plant, again thrown out by exudation from the roots, and deposited in the soil. This idea has been more fully pursued by De Candolle, who sees in it the true theory of the rotation of crops. He thinks it probable, that it is the existence of this exuded matter, which may be regarded in some measure as the excrement of the preceding crop of vegetables, that proves injurious to a succeeding vegetation.

M. Macaire tried various experiments by placing plants with well-washed roots in distilled water; and by putting part of the roots in pure water, and the other part in poisonous and saline solutions. In the former excrementitious matter was exuded; and in the latter the substances of the solution were found in the pure water. These experiments proved also that the roots exuded more in the night than in the day. As the light causes the roots to absorb their juices, it is natural to suppose that they cease absorbing, and exude a phenomenon similar to that of the leaves, giving out oxygen in the day, and carbonic acid gas in the night. The following experiments harmonize theory and practice:

The bean lives well in pure water, which continues quite clear, but assumes a yellow color. Chemical tests and evaporation detect a matter in this water very analogous to gum, and a little carbonate of lime. It was found that the water in which the bean had lived was well charged with excrementitious matter. Fresh plants of beans did not live well in it; but to ascertain whether this arose from want of carbonic acid in the fluid, or from the presence of exuded matter which they repelled, plants of wheat were placed in the water. They lived well; the yellow color of the fluid became less intense, the residuum less considerable, and it was evident that the new plants absorbed a portion of the matter discharged by the first. Hence the practice of cropping wheat after beans is justified by this experiment.

Wheat, rye, and barley, were subjected to experiment. They do not live well in pure water, probably from the quantity of mineral substances, particularly silex, which they contain. The water in which they vegetated was clear, transparent, without color, smell, or taste. It contained some salts, alkaline and earthy muriates and carbonates, and only a very small portion of gummy matter. As gummy matter appears to be a good preparation for wheat, and which was illustrated in the experiment of the bean, corn crops, which do not give out gummy matter, ought not to succeed each other. And as M. Macaire thinks that plants of corn reject scarcely any thing but the saline matters foreign to vegetation, it is probable that any preparation but by their own kind would be acceptable to several plants. The practice of preparing soil for corn crops by the culture of green crops is thus countenanced by experiment.

The potato lives well in water, and puts forth its leaves. The water is scarcely colored, leaves little residuum, gives but little taste, and induces the belief that this is one of the plants whose roots secrete little or nothing of a decided character. This experiment of the potato, M. Macaire observes, was made upon a plant at an early stage of development. The experiment would lead to the inference that the potato is not a very good preparative for corn crops, which is known to be the case in practice, unless it is assisted by an extraordinary quantity of manure. All these facts tend to prove the theory of rotation suggested by M. De Candolle.

On this subject there is a wide and inviting field for our chemists, and other scientific men, as well as the inquiring and enlightened farmer.

DAIRY HUSBANDRY OF HOLLAND.—This article is by Mr. William Aiton; from it we make the following extracts, containing all we deem of special interest to our readers:

The making of butter is no where better understood, or conducted with greater propriety, than in the Dutch provinces, and particularly in Friesland, where great quantities of excellent butter are made, much of which is sent to the London market. Large quantities of the best butter, perhaps, in the world, are brought every week to the market at Leewaerden, the capital of the province of Friesland, and to Sneeck, a market town in that department, where seven or eight thousand firkins, of 80 lbs. each, may sometimes be seen offered for sale on one market day, most of which is bought up for the London market. There are seven or eight ships constantly employed in conveying butter from Harlingen to England. Much fine butter is also made to the south of Rotterdam, towards Belgium. There is no part of Britain, or probably in the world, where butter is of a richer quality, or a finer taste, and more free from impurities, than that made in Holland.

The superior quality of the Dutch butter may probably proceed, in part at least, from the soil and climate, and partly from the breed of cows; but, most of all, from the careful and cleanly manner in which all the operations of the dairy, regarding butter in particular, are conducted in that country. The soil, in all parts of Holland, is favorable to the growth of meadow-grasses. And though much of the soil is too damp, yet it is rich; and being impregnated with a portion of salt, with which the herbage is also tinged, the cows can eat a large quantity of the salted herbage with impunity, and which, no doubt, enriches the quality of the milk. The climate, too, is favorable to the growth and health of cows. It has been found from experience, that when cows are fed on good natural herbage, the butter is richer, and has a finer flavor, than when the same cows are fed on clover, turnips, and artificial grasses. The cows in Holland give a great quantity of butter in proportion to the quantity of milk. The cows of the improved dairy breed, in this country, that are fed on artificial herbage, give more milk, and less butter, than the same do when cows are fed on natural pastures. All cows that are in good condition always give richer milk than the same cows will when they are lean.

The quality of butter is considerably affected, by the period of time allowed for the cream to rise before it is taken off the milk. The cream that comes first to the surface is always thicker and the butter from it richer, and of better flavor, than that which is made from the cream that is longest rising to the surface of the milk. The reason of this is obvious. The fattest portion of the milk will always come first to the surface; and the longer the cream is allowed to remain on the milk, the less fatty portion will diminish the average quality of the whole by admixture, and permit the injurious action of the atmospheric air.

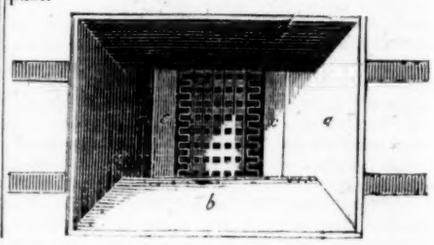
Of all the people on the face of the earth, the Dutch are the most attentive to cleanliness in the management of their dairies, and indeed in their whole domestic economy. Their milk-houses, and every dish and implement belonging to them, are kept as clean as the china or crystal used at table in this country; so that to their superior attention to cleanliness, the superior quality of their butter may, in a great degree, be attributed. If so, it holds out great encouragement to all other people to follow their example in this respect.

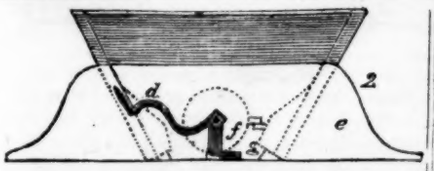
PREPARING FOOD FOR HORSES.—On the authority of Mr. Dick, it is stated that eight ounces of saliva are discharged in a minute from the salivary glands of the horse, when he is eating his food. In masticating hay, dry and hard as it generally is, these glands are kept discharging too long, often through the greater part of the night, to satisfy the appetite of the horse. It seems reasonable that this would exhaust his strength. Hence the propriety of lessening the *labor* of eating, by cutting or softening the hay, for an animal that so nobly and spiritedly toils for his master. The effect of feeding horses on dry hay is to wear away the teeth, and, consequently, the labor is increased as the animal advances in age.

The use of potatoes for horses would be much more general if they could be more easily preserved through the winter and summer. The writer recommends to bury them five feet below the surface of the ground, where they will keep until August. Bean straw is said to be as nourishing to horses as hay. If so, it should be an object with the American farmer to cure it properly.

CURD-BREAKER FOR SKIM MILK CHEESE.—Have any of our readers a better method of preparing their curd than the one we now submit to their inspection?

We have heard of many curious expedients adopted by housewives, and some of them highly ludicrous, to facilitate the breaking of curd. This simple instrument is a happy substitute for every sort of expedient. With it any boy or girl can break the curd arising from the milk of eight or ten cows in fifteen minutes. It is not intended for the making of sweet milk cheeses, the curd of which should be broken very gently. It was invented by Mr. Robert Barlas, Gilmour Place, Edinburgh, and has been in use on some farms for several years past.





a, fig. 1, is a hopper of wood 17½ inches by 14 on the top, and 10 inches in depth. *b* is a cylinder of hard wood 6¾ inches in length, and 3½ in diameter. It is studded with hard wood square pegs of a quarter of an inch in the side, cut square at the ends, and projecting three-eighths of an inch. There are eight teeth in the length, and fifteen in the circumference, of the cylinder, 120 teeth in all. It revolves on a round iron axle 12 inches in length, and is moved by the crank-handle *d* in fig. 2; *c c* are two wedge-shaped pieces of hard wood, made to fill up in some degree the space between the side of the hopper and the cylinder. These pieces rest on a slip of wood nailed to the lower rim of the hopper, to keep them in their place. The face of these is studded with nine teeth of hard wood, similar to those on the cylinder, in a horizontal position, but so placed as to embrace those of the cylinder at opposite sides. The stand *e*, fig. 2, can be made of any length, to suit the breadth of the tub into which the curd is broken. The implement is used in this manner: place it over a tub, heap the hopper *a* with curd, and turn the winch *d* in either direction, and the curd will fall quite small broken into the tub. While one hand is moving the machine, the other can press the curd gently down into the hopper. As cleanliness is a matter of the greatest importance in cheese-making, the internal parts of this machine being loosely put together, can easily be taken to pieces to clean. The cylinder axle rests on two hard wood plumber-blocks *f*, fig. 2, one on each side, which slip out of their groove. They are held in their working position by the thumb-catch *g*, sunk flush with the bottom of the stand *e*, one over each plumber-block. The wedge-shaped pieces *c c*, fig. 1, come out. To prevent the curd working out of the sides of the axle, the cylinder is set a little at both ends into the sides of the hopper. The dotted lines in fig. 2 will give an idea how the internal part of the machine is constructed. Only one tooth is represented on the cylinder by the dotted lines, to show the position of the whole.

Top Dressing Permanent Pastures.—On New-York Island, and in the vicinity, milkmen pay a very high price for pasture. In the spring or early summer months, as soon as the grass is of pretty good height, they turn in a large number of cows, and, in a few weeks, the grass is eaten down. When it is pastured off the second time, in particular, it would seem as though one half of the surface was ungrazed—occupied with the cow droppings. When the Editor was a little boy, he and his brothers were provided with dung-beetles, and every spring, in fine April mornings, before school hours, it was sport to go over the pasture and mowing grounds, and knock into pieces the cow and horse droppings. Similar practices should be adopted by every farmer, particularly by those who hire pasture. The following extract is worthy of consideration:

Old women have been engaged to collect in baskets, latterly in wheel-barrows, the droppings of cattle in pasture-land, and to deposit the collections in heaps, at convenient stations in the fields, where the manure has been compounded with the earth previously laid down and prepared. When duly mixed, the compound has been laid down as a top dressing on the same field. The result has been a great increase of fertility, while the whole fields have presented the equable and beautiful appearance of a lawn.

At these stations earth has been previously prepared and laid down, from the scourings of ditches, parings of head-furrows, the furrows ploughed out (acting besides as useful drainage, where the land is damp, and in ridges,) or other sources.

The quantity of earth used ought to depend on its quality. Four cubic yards to the cubic yard of the collection has been found to produce rich and powerful top-dressing. In many situations five may be used with safety; in others three will be more expedient. If each cubic yard be allowed to cost 2d., then, on the average of four to one, the cost will be 8d. for the earth and 11d. for the manure; and the proceeds being five cubic yards, the cost is under 4d. per yard for a rich compound laid down in the field in which it is to be used.

The plan followed has been to commence at one side of the field, and to dress at the rate of 15 to 18 cubic yards per acre, as far as the compound will go, to commence next year, where the former year's process stopt, and so on; and in ordinary pastures, the calculation in 1831 was that a field would be gone over every second or third year.

Irish Landlords.—The spirit of benevolence dictated this article. It points out forcibly how much good humane landlords have it in their power to accomplish, by encouraging, aiding, and employing the poorer class of tenants.

Agricultural Exhibition at Stirling.—It is not uncommon for extensive landholders, breeders of stock, and seedsmen, to have public exhibitions and sales, which are open to the contributions, and benefit, of others. Among these are the Messrs Drummond, of Sterling. The details of experiments on grasses, plants, &c. are made known. The following will instance:

In order to establish a standard of density among turnips, they were immersed in water, and the quantity of water which they displaced being noted, they were then weighed. By this treatment, the green-top Yellow indicated a bulk of 32 cubic inches to the pound, and which was taken as a medium density. Dividing the volume of water displaced by each kind of turnip by 32, the remainder being halved for sixteenths or ounces, the quotient will show the pounds and ounces which it ought to weigh to be of standard density. The actual weight of the root will then show whether the kind weighed is above or below that standard. We have thus a very simple scale, which affords a just criterion of value, and at the same time a correct idea of size.

In this manner the following trials made on turnips, selected from different soils, and of various weights, including two of the heaviest of each kind, gave of the

Swedish	6 trials	-	8	0	9	13
Green-top yellow	5 —	-	13	3	11	13
Red-top yellow	4 —	-	10	6	10	13
Dale's hybrid	4 —	-	11	0	10	1
White globe	6 —	-	14	7	12	2
Red-top white	4 —	-	13	4	11	4
Green-top white	2 —	-	11	8	10	12
White tankard	1 —	-	16	14	14	0
Purple tankard	1 —	-	12	10	11	8

The Swedish turnip thus stands pre-eminent in regard to density, and contrary to all others, the largest is always the most solid. According to the experiments of Mr. Sinclair, at Woburn, the nutritive matter afforded by the largest sized Swedish turnip, in proportion to the small, is as 410 to 99. One pound of Swedish turnips, or 7000 grains, yields 440 grains of nutritive matter. The Swedish, then, under every species of trial, is the best feeding turnip.

This turnip is astringent; and if young sheep are kept too long on it they die of the disease called pining. Clay soils produce turnips of more equal shape than lighter soils. Lime applied as manure lessens the quantity of leaves in proportion to the root.

The results in planting potatoes of different sizes, and cut into pieces, were contradictory to those of Mr. Knight, in which he recommends the whole potato of considerable size. The cut ones, and those that were very small, gave the largest produce. Taylor's forty-fold potato, after repeated and careful trials, was found to exceed, in produce, in a considerable degree, every other variety of the early sorts. It is also superior to most of the late kinds.

Among the curious things which were exhibited, we may mention a plant of the annual rye-grass, of spontaneous growth, measuring from 2½ to 3 feet high, and having 320 stalks, which contained 46,000 seeds. Potato-flour was presented by Miss Colquhoun, Melville Place, Stirling, which was 38 years old, and in fine condition. It was made at Camstradden, in 1794, from potatoes, which had been damaged by a sudden rise of water in Lochlomond. Frosted potatoes, it seems, answers as well as sound ones for making potato-flour. Biscuits, in good preservation, baked in 1800, from wheat-flour, were presented by Mrs. Gray, Bearside. Messrs. Drummond had a specimen of beech hedge, which was reared simply by annually cutting the sides close in and nearly perpendicular, and never the top till they had arrived at their desired height. 900 yards of these have been kept 7 or 8 feet in height more than 20 years, increasing only 2 or 3 inches in width. They are 15 inches wide at bottom, and 12 inches wide within 6 inches of the top. In 1821 we made a very successful transplantation of a beech hedge of rather more than 6 feet in height, around a piece of ground for forcing melons, and cucumbers, and a few very early culinary plants. It was kept switched up with a hedge-bill, in the shape of a hog mane, and so closely did the leaves interlace, that they completely intercepted the view. The hedge remains in full vigor to this day.

On the Improvement of Society by the Diffusion of Knowledge. By Thomas Dick, LL. D. Illustrated with engravings.—New York, J. & J. Harper, 1833; 12mo. pp. 442.

It has long been a proverb, that man is an inquisitive being; and yet it is a fact that a vast majority of the human race have been in all ages, and are still, grossly ignorant. Even the accumulated knowledge of the myriads that have peopled the earth has advanced the most cultivated nations to behold merely the dawning of light: and in these favored nations, but comparatively few have any pleasure in contemplating the dawn, or any curiosity to see, or to hear, of the varied beauties and wonders that will lie open to view as the light of morn advances. Take, for instance, Scotland, much favored and enlightened Scotland, the knowledge of ninety-nine hundredths of whose population is supposed to extend to no subject of importance beyond those of their daily avocations—as ignorant as the Tartar, or the untutored Indian, "of the figure and magnitude of the world they live in—of the seas and rivers, continents and islands, which diversify its surface, and of the various tribes of men and animals by which it is inhabited—of the nature and properties of the atmosphere which surrounds them—of the discoveries which have been made respecting light, heat, electricity, and magnetism—of the general laws which regulate the economy of nature—of the various combinations and effects of chemical and mechanical powers—of the motions and magnitudes of the planetary and

the starry orbs—of the principles of legitimate reasoning—of just conceptions of the attributes and moral government of the Supreme Being—of the genuine principles of moral action—of many other subjects interesting to a rational and immortal being."

Eight hundred millions of human beings people the earth, only two millions of whom are considered truly enlightened, prosecuting rational pursuits for a love of science. The late Frederick, king of Prussia, in a letter to D'Alembert, in 1770, makes a still lower estimate; and the picture he then drew, with very little re-touching, answers for the present age. He says—

"Let us take any monarchy you please; let us suppose that it contains ten millions of inhabitants; from these ten millions let us discount,—first the laborers, the manufacturers, the artisans, the soldiers, and there will remain about fifty thousand persons, men and women; from these let us discount twenty-five thousand for the female sex, the rest will compose the nobility and gentry, and the respectable citizens; of these let us examine how many will be incapable of application, how many imbecile, how many pusillanimous, how many dissipated,—and from this calculation it will result, that out of what is called a civilized nation of nearly ten millions, you will hardly find a thousand well informed persons, and even among them what inequality with regard to genius! If eight-tenths of the nation, toiling for their subsistence, never read—if another tenth are incapable of application, from frivolity, or dissipation, or imbecility,—it results, that the small share of good sense of which our species is capable can only reside in a small fraction of a nation."

How humiliating is this picture! Where is man's boasted knowledge, and even his inquisitive propensity? Who, in view of these facts, does not feel chagrined for the honor and dignity of the human race? Who does not feel almost an overwhelming moral obligation to exert all his powers in the diffusion of useful science?

Mr. Dick's book inculcates and establishes this doctrine,—that knowledge, or more particularly physical science, and true religion, will progress with equal pace in ameliorating and perfecting the condition of human society.

We lay before our readers a few promiscuous selections, which, in connection with those at page 378, will give our readers an idea of the topics introduced by Mr. Dick.

ASTROLOGY.

"Only a short period has elapsed since the princes and legislators of *Europe* were directed in the most important concerns of the state by the predictions of astrologers."

"The astrologer Morion, in the seventeenth century, directed Cardinal Richelieu's motions in some of his journeys, and Louisa Maria de Gonzaga, Queen of Poland, gave 2000 crowns to carry on an edition of his *Astrologia Gallica*; and in the reigns of Henry the Third and Henry the Fourth of France, the predictions of astrologers were the common theme of the court conversation. Even in the present day, and in the metropolis of the British empire, this fallacious art is practised, and its professors are resorted to for judicial information, not only by the vulgar, but even by many in the higher spheres of life. The extensive annual sale of more than 240,000 copies of "Moore's Almanac," which abounds with such predictions, and of similar publications, is a striking proof of the belief which is still attached to the doctrines of astrology in our own age and country, and of the ignorance and credulity from which such a belief proceeds."

SUPERSTITION.

"The illustrious Friar Bacon, because he was better acquainted with experimental philosophy than most persons of the age in which he lived, was suspected, even by the learned ecclesiastics, of having dealings with the devil."

"Monthly Magazine for July, 1813, p. 496. 'In Staffordshire they burn a calf in a farm-house alive, to prevent the other calves from dying.'"

"'At Long Aston, a young farmer has several times predicted his own end, from what he calls being *looked over*; and his mother and father informed a friend of mine (says the relater) that they had sent to the white witch doctor, beyond Bridgewater, by the coachman, for a charm to cure him (having paid handsomely for it); but that he had now given him over, as her spells were more potent than his. If not dead, he is dying of mere fear, and all the parish of his class believe it. There is also, in that parish, an old man who sells ginger-bread to the schools, who is always employed to cure the *red water* in cows, by means of charms and verses which he says to them. In the Marsh, we have water doctors who get rich; at the mines, diviners with rods, who find ores and water; and at Weston-super-Mare, they see lights before funerals, and are agreed that the people in that parish always die by threes, i. e. three old, three young, three men, three women, &c. Such are a part only of the superstitions of the west in 1813!'"

"The pernicious effects in mines, occasioned by the explosion of hydrogen gas, were formerly imputed to the demons of the mine. Van Helmont, Bodinus, Strozza, and Luther, attributed thunder and meteors to the devil. Socrates believed he was guided by a demon. Dr. Cudworth, Glanville, and others, wrote in defence of witchcraft and apparitions."

"But, what is worst of all, *such notions almost invariably lead to the perpetration of deeds of cruelty and injustice.* Of the truth of this position the history of almost every nation affords the most ample proof."

SCIENCE.

"The tower of Pisa, in Italy, leans sixteen feet out of the perpendicular, so that strangers are afraid to pass under it; but as the plummet or line of direction falls *within its base or foundation*, it is in no danger of falling, if its materials keep together; and hence it has stood in this state three hundred years. But were an additional erection, of any considerable elevation, to be placed upon its top, it would undoubtedly soon tumble to ruins."

"Were the number of such persons increased but a thousand-fold, so that for every twenty scientific investigators now existing, twenty thousand were employed in surveying the various localities, aspects and operations of nature, in the animal, vegetable, and mineral kingdoms, on the surface of the earth and the ocean, and in the celestial regions,—*hundreds* of new facts would, in all probability, be brought to light, for *one* that is now discovered by the present contracted circle of scientific men, from which new and important conclusions in the arts and sciences might be deduced."

SCIENTIFIC LEISURE.

"Every man, under a well-regulated government, enjoys a certain portion of leisure from the duties of his station, which in too many instances is wasted either in listless inaction, or in the pursuits of folly and dissipation. This leisure is all that is requisite for the purpose in view. It would only be requisite that, during its continuance, the train of their thoughts should be directed into a channel which would lead them to more pleasing associations, and more substantial pleasures, than the general current of human thought is calculated to produce."

"The system of nature, though directed in its general movements by a few simple laws, is too grand and extensive, and too complex in many of its parts, to be grasped by a few individuals, after a cursory survey; and, therefore, to attempt to comprehend its multifarious revolutions, phenomena and objects within the range of theories founded on a partial view of some of its detached parts, is not only an evidence of presumption and folly, but tends to damp our ardor in prosecuting the only sure path which leads to discovery, and to frustrate what appears to be one of the designs of the Creator, namely, *to grant to the intelligent inhabitants of our globe a gradual display of his stupendous plans in the universe as the reward of their incessant and unwearied contemplation of his wondrous works.*"

"The observations made during a single voyage across the Atlantic, by a single observer, M. Humboldt, on the aspect of the Antarctic region of the heavens—the peculiar azure of the African sky—the luminous meteors of the atmosphere—the tides, the currents, and the different colors of the ocean, and other phenomena which happened to present themselves to his view—are of more value to the scientific world than the observations of ten thousands of other beings who, for a series of years, have traversed the same regions."

SUBLIMITY OF NATURE.

"What a sublime idea, for example, is presented to the view by such an object as the planet *Jupiter*,—a globe fourteen hundred times larger than the world in which we dwell, and whose surface would contain a population a hundred times more numerous than all the inhabitants that have existed on our globe since the creation! And how is the sublimity of such an idea augmented, when we consider that this immense body is revolving round its axis at the rate of twenty-eight thousand miles in an hour, and is flying at the same time, through the regions of space, twenty-nine thousand miles every hour, carrying along with it four moons, each of them larger than the earth, during its whole course round the centre of its motion!"

LOVELY PICTURE.

The following paragraph exhibits a most beautiful and lovely picture:

"How delightful an enjoyment is it, after the bustle of business and the labors of the day are over, when a married couple can sit down at each corner of the fire, and, with mutual relish and interest, read a volume of history or of popular philosophy, and talk of the moral government of God, the arrangements of his providence, and the wonders of the universe! Such interesting conversations and exercises beget a mutual esteem, enliven the affections, and produce a friendship lasting as our existence, and which no untoward incidents can ever effectually impair. A

Christian pastor, in giving an account of the last illness of his beloved partner, in a late periodical work, when alluding to a book she had read along with him about two months before her decease, says, 'I shall never forget the pleasure with which she studied the illustrations of the Divine perfections in that interesting book. Rising from the contemplation of the variety, beauty, immensity, and order of the creation, she exulted in the assurance of having the Creator for her Father, anticipated with great joy the vision of him in the next world, and calculated with unhesitating confidence on the sufficiency of his boundless nature to engage her most intense interest, and to render her unspeakably happy for ever.' It is well known that the late lamented *Princess Charlotte* and her consort Prince Leopold lived together in the greatest harmony and affection; and from what her biographers have stated respecting her education and pursuits, it appears that the mutual friendship of these illustrious individuals was heightened and cemented by the rational conversation in which they indulged, and the elevated studies to which they were devoted. Her course of education embraced the English, classical, French, German, and Italian languages; arithmetic, geography, astronomy, the first six books of Euclid, algebra, mechanics, and the principles of optics and perspective, along with history, the policy of governments, and particularly the principles of the Christian religion. She was a skilful musician, had a fine perception of the picturesque in nature, and was fond of drawing. She took great pleasure in strolling on the beach, in marine excursions, in walking in the country, in rural scenery, in conversing freely with the rustic inhabitants, and investigating every object that seemed worthy of her attention. She was an enthusiastic admirer of the grand and beautiful in nature, and the ocean was to her an object of peculiar interest. After her union with the prince, as their tastes were similar, they engaged in the same studies. Gardening, drawing, music, and rational conversation, diversified their leisure hours. They took great pleasure in the culture of flowers—in the classification of them—and in the formation, with scientific skill, of a *hortus siccus*. But the library, which was furnished with the best books in our language, was their favorite place of resort; and their chief daily pleasure, mutual instruction. They were seldom apart either in their occupations or their amusements; nor were they separated in their religious duties. 'They took sweet counsel together, and walked to the house of God in company;' and it is also stated, on good authority, that they had established the worship of God in their family, which was regularly attended by every branch of their household."

POWER OF FLUIDS.

"A few years ago, a friend of mine, when in Ireland, performed this experiment to convince an English gentleman, who called in question the principle, and who laid a bet of fifty pounds that it would not succeed. A hogshead, above 3 feet high, and above 2 feet wide, was filled with water; a leaden tube, with a narrow bore, between 20 and 30 feet long, was firmly inserted into the top of the hogshead; a person, from the upper window of a house, poured in a decanter of water into the tube, and, before the decanter was quite emptied, the hogshead began to swell, and in two or three seconds, burst into pieces, while the water was scattered about with immense force.

"Hence, we may easily perceive what mischief may sometimes be done by a very small quantity of water, when it happens to act according to its perpendicular height. Suppose that in any building, near the foundation, a small quantity of water, only of the extent of a square yard, has settled, and suppose it to have completely filled up the whole vacant space, if a tube of 20 feet long were thrust down into the water, and filled with water from above, a force of more than 5 tons would be applied to that part of the building, which would blow it up with the same force as gunpowder. The same effect may sometimes be produced by rain falling into long narrow chinks, that may have inadvertently been left in building the walls of a house; which shows the importance of filling up every crevice and opening of a building, and rendering the walls as close and compact as possible."

SCIENCE AND EXPERIMENT.

"Now what is it that enables us to investigate the works of God, and to contemplate the system of nature *in its true light?* It is *Science*, combined with observation and experiment. And what is science, considered in a theological point of view? It is nothing else than a rational inquiry into the arrangements and operations of the Almighty, in order to trace the perfections therein displayed. And what are the truths which science has discovered? They may be regarded as so many rays of celestial light descending from the Great Source of Intelligence to illuminate the human mind in the knowledge of the Divine character and government, and to stimulate it to still more vigorous exertions in similar investigations, just as the truths of revelation are so many emanations from the 'Father of Lights,' to enlighten the darkness and to counteract the disorders of the *moral* world; and both these lights must be resorted to to direct our inquiries, if we wish to attain the clearest and most comprehensive views of the attributes of the Divine mind."

"The *specific gravity* of these two substances is nearly as 37 to 33; that is, the nitrogen is a small degree *lighter* than the oxygen. Were this proportion reversed, or, in other words, were the oxygen of the atmosphere a small degree lighter than the nitrogen, so that the nitrogen might become a little heavier than common air,—as this gas is thrown off continually by the breathing of men and other animals,—it would perpetually occupy the lower regions of the atmosphere, and be productive of universal pestilence and death."

ADAPTATION OF NATURE.

"Now, it is a fact that, from the elephant to the mite, from the whale to the oyster, and from the eagle to the gnat, or the microscopic animalcula, no animal can subsist without nourishment. Every species, too, requires a different kind of food. Some live on grass, some on shrubs, some on flowers, and some on trees. Some feed only on the roots of vegetables, some on the stalk, some on the leaves, some on the fruit, some on the seed, some on the whole plant; some prefer one species of grass, some another. Linnæus has remarked, that the cow eats 276 species of plants, and rejects 218; the goat eats 449, and rejects 126; the sheep eats 387, and rejects 141; the horse eats 262, and rejects 212; and the hog, more nice in its taste than any of these, eats but 72 plants, and rejects all the rest. Yet such is the unbounded munificence of the Creator, that all these countless myriads of sentient beings are amply provided for and nourished by his bounty!"

"*Evaporation* is a process by which water and other liquids are converted into vapor. The matter of *heat*, combining with water, renders it specifically *lighter*, by which means it rises and mixes with the atmosphere, where it remains either *invisible*, or assumes the appearance of clouds. In this state it occupies a space fourteen hundred times greater than in its ordinary liquid state, and consequently is much lighter than the atmospheric air into which it rises. It has been calculated, that, from an acre of ground, during twelve hours of a summer's day, more than 1600 gallons of water have been drawn up into the air in the form of vapor. From the whole surface of the ocean there arise, every twelve hours, no less than 30,320,500,000,000, or more than thirty millions of millions of cubic feet of water, which is more than sufficient to supply all the rivers that intersect the four quarters of the globe. This immense body of vapor is formed into clouds, which are carried by the winds over every part of the continents; and, by a process with which we are still unacquainted, is again condensed into rain, snow, or dews, which water and fertilize the earth. Now, if this wonderful and extensive process of nature were to cease,—we might wash our clothes, but centuries would not dry them, for it is evaporation alone that produces this effect—there would be no rains nor dews to fertilize our fields, and the consequence would be, the earth would be parched, and the vegetable productions which afford us subsistence would wither and decay,—the rivers would swell the ocean, and cause it to overflow a portion of the land, while, at the same time, their sources would soon be completely exhausted, and their channels dried up."

ORIGINAL COMMUNICATIONS.

Six Years Rotation of Crops, and its Results. By WM. TAYLOR. [For the New-York Farmer and American Gardener's Magazine.]

MR. FLEET,—I have often thought if farmers would, more frequently, give an interchange of their views and practice in agricultural pursuits, through the medium of your excellent Magazine, the brotherhood would receive many advantages and useful hints; and being fully satisfied that I have received (even in a pecuniary point of view) more than the principal and interest on the three dollars I sent you for the New-York Farmer, as also many mental feasts, on rainy days and evenings, from its pages, besides the many useful hints my wife and daughters have received, which have added not a little to our comfort and happiness, I feel an obligation resting on me, although entirely unaccustomed to writing for the public eye, to attempt to contribute my feeble part in so good a cause.

The most of my neighbors around me still continue the old system of summer-fallowing and ploughing, two, three or four times for every crop, which is usually much less than might be obtained, with judicious management, with once ploughing only, and save the loss of much labor, team, and wear and tear, and use of land by summer fallowing, (which ought to be exploded,) but also the great loss of the fermentation of the sod and other substances, which might otherwise be the best of

food for the grain crop. I feel impelled, by a sense of duty, to send you an account of what I consider the great advantages of the Six Years Rotation System of Crops, and only once ploughing for any crop. I have pursued it for many years, and, if it was generally adopted in this great empire state, I am convinced it would make a clear gain annually of $50,000.

From my early days I have been accustomed to agriculture, and, when a boy, would frequently ask many questions of my father, (whose memory I revere,) if such and such methods of farming would not be better than the old system. As my questions were frequent, and had, probably, become rather troublesome, he gave me, for a general answer, to note down such plans as my own brain would suggest, as an improvement, and if I lived to become a man, I could then put them in practice, and ascertain their utility.

The first of all my plans was to clear the ground of stumps and stones, and if it was but one acre a year that could be added, to let that be *well* done; for it is an important point, ever to be borne in mind by the farmer, after he determines to do a thing, that it be *well* done.

I then begin my six years rotation of crops with Indian corn and potatoes. I spread my manure in the spring of the year, in its long unfermented state, from the barn yard, on the sod, before the plough, then smoothly invert the sod, at the depth of 4½ inches, following with the roller, and then with St. John's double harrow effectually lengthwise. I, then, with a simple machine, mark out two or three rows at a time, going through both ways, from two feet ten inches to three feet apart, plant the deep grain long-eared eight-rowed corn, get from thirty to ninety bushels shelled corn per acre, averaging only about forty-five or fifty, because much of it has no other manure than gypsum and the fermentation of the sod. My method of cultivating the corn crop is very similar to that excellent communication made by Jesse Buel, Esq. in your New-York Farmer, page 147. Cost of preparing the ground and tilling the corn, is $8 per acre; the stalks will pay for harvesting the corn.

The second year I plough my stalk ground in April into fifteen pace lands, sow barley, peas or oats, and harrow lengthwise first, then crosswise. If the weather is dry, and there are any lumps, pass the roller over, and open the dead furrows with the plough. Crop of oats average 45 bushels, barley 25, peas 15. Cost of tilling $4 per annum.

Third crop. As soon as the hogs have cleared the stubble of grain, I turn the stubble all smoothly under, about four inches deep, leaving the dead furrow where the ridge was in the last crop; and between the 15th and 20th of September I spread a light coat of manure over the lands as they have been ploughed, and follow immediately with the seed, 1½ bushel to the acre, it having been previously steeped in brine of common salt twelve hours, then four quarts of lime well stirred up amongst a bushel of wheat, and then add five or six quarts of gypsum finely ground.

In this way of preparing seed I have not had smutty wheat in twenty years, and very seldom troubled with rust. The double harrow follows hard after the sower (lengthwise of the furrow of course,) covering the seed, and mixing the manure with the earth, before it has time to dry or waste with the wind or sun; cross harrow as before; pass over the roller, open the dead furrows, and otherwise ditch, if necessary, so that the water, in the spring of the year, will run off readily. Crop of wheat from ten to thirty bushels per acre; average eighteen or twenty; cost of tilling and carting out manure, $6 per acre. Early in March sow on the wheat twelve quarts of timothy seed, and four quarts of red clover seed, to the acre. Early in May sow a bushel of gypsum, and at wheat harvest the clover and timothy will, ordinarily, be a beautiful green rich verdure, an ell high, that would make a man smile if his head ached ever so bad. It may be pastured considerably, but not too late in the season.

Fourth year. Mow from two to three tons of hay per acre, average two and a half. Fall feed will nearly pay for cutting and securing the hay.

Fifth year. Mow again, average two tons. The fall feed again pays all expenses.

Sixth year. In May sow one bushel of gypsum per acre, and pasture the whole summer; it will afford a rich pasture, equal to two tons of hay, and be much better for the corn crops, which, the next year, will again commence the rotation, than if the ground had been mown the last of the six years rotation.

Perhaps I ought to give you a statement of my success, from year to year, in pursuing the course I so earnestly recommend; for it is a common remark among farmers, that the practical result is every thing.

The fifty acres I began with was a gift from my father, worth $800. The timber was chiefly removed from forty acres of it. The old system of ploughing three or four times for every crop being in practice, and the stones not having been removed, much of the soil was exhausted by hard cropping. As I became able I purchased several small farms adjoining, at twenty four or twenty-five dollars per acre, brought them under the above method of tillage, and have now a farm of nearly 300 acres, 215 of it improved, lying together, which would now command about $40 per acre, and which yearly gives the following results.

Products of 215 acres of improved land, lying on the line between Ballston and Charlton, part in each town—being for the year 1833:

Wheat, 280 bushels at	8s. 6d.		$297 50
Oats, 547	3	0	205 00
Peas, 55	5	6	37 81
Rye, 20	6	0	22 50
Wool, 658 lbs.	4	0	329 00
62 Sheep, being the increase of the flock, at	16	0	124 00
600 lbs. of Butter, and 240 lbs. Cheese,			105 00
Pork, 4000 lbs. at 5 cents,			220 00
Beef, 2500 lbs. at 3½ "			87 50
Corn, 624 bushels at 4s.			312 00
Potatoes, 600 bushels at 17 cents,			102 00
Cider, 50 barrels at 8s.			50 00
Winter Apples, 50 bushels,			12 00
5 Veal Calves, at 20s.			12 50
Poultry and Eggs,			5 00
Rent of three out-dwelling-houses on the farm,			73 00
Rent of chief mansion-house, &c.			100 00
			2182 81
Growth of colts will pay for the team.			
Deduct for expenses below			858 62
Clear gain			1324 19

Expended for feed, labor, seed, wear and tear, &c.:	
208 bushels corn, fed to pork and beef, at 4s.	$104 00
400 bushels potatoes to do. and other stock, at 17 cents,	68 00
200 bushels oats, fed to team and stock, at 3s.	93 75
24 bushels seed wheat, at 10s.	30 00
35 bushels seed oats, at 3s.	13 12
7 bushels seed peas, and 2 of rye, at 6s.	6 75
Seed corn, and plaster or gypsum,	15 00
Wear and tear, including mechanics' work,	60 00
Labor, one man at 16 dollars per month, as principal,	192 00
Two men at 14 dollars per month, for seven months each	196 00
Two boys at 30 dollars each, the summer,	60 00
Taxes	20 00
Total Expenses	$858 62

The hands all board themselves.

The clear gain is more than 15 per cent, calling all the improved land $40 per acre. The growth of the timber land will, at least, be 7 per cent. at the same price per acre.

Let no farmer, or farmer's son, rise from the perusal of the above plain and unvarnished statement, and say he is

> "Doom'd to tread the thorny ground.
> Where few, he fears, are happy found."

But let him feel and act as if agriculture, managed with system, and true economy, is the most profitable, most healthy, most honorable, and best calculated to raise our thoughts and aspirations of praise to that beneficent being who gives us wisdom to cast in the "appointed wheat, and vetches, and barley, in its place;" and let us honorably sustain the cause, by faithfully doing our duty, and we and ours will be blessed, and happy.

P. S.—Forgive the egotism, for one can scarcely speak of his own doings without it. A similar statement for the year 1832 lacks only $9 87 of being 15 per cent at $40 per acre.

Respectfully, yours,
W. TAYLOR.

Charlton, Saratoga Co.
Oct. 25, 1833.

REMARKS.—We are much pleased with the above communication, and hope we shall be favored with many similar to it.—[ED.]

Value of Lands in Virginia. By L. T. [For the New-York Farmer.]

I wish, Mr. Editor, some of your readers, acquainted with the past and present state of agriculture in Virginia, would communicate to you statistical facts and illustrations, that would trace the evils experienced in the "Old Dominion" to their true causes. Such facts would be highly interesting, and when compared with the state of things in most of the eastern and northern states, would have an important bearing on the subjects that agitate the southern and northern portions of the Union—would place a prosperous agriculture, particularly that which combines science and practice, among the first objects of legislative care and watchfulness.

I take the liberty of sending you an extract from several letters from a correspondent of the N. Y. Journal of Commerce.

VIRGINIA, 25th Oct. 1833.

The tide water region, in which, at the

commencement of the Revolution, were concentrated all the wealth, population, and intelligence of Virginia, embraces less than one tenth of the territory of the state, and contains, at present, sixty or seventy thousand whites, and about eighty thousand blacks. Notwithstanding its general and rapid decline, there are still more vestiges of old Virginia manners and habits to be found here, than in the richer portions of the state. The natural fertility of the river lands has here and there withstood the effects of slovenly culture, and they still continue to yield good crops of corn and tobacco. Here and there you will find, in the midst of a wilderness, some great barony, whose lord manages, by the annual sacrifice of a few of his serfs, to maintain something of the old fashioned aristocratic state and luxury. There are also many smaller estates, whose proprietors live in an easy and independent manner, and are distinguished for urbanity, good sense and hospitality. But a vast majority of the population, particularly those who inhabit the barren ridges between the water courses, are, to the last degree, wretched, poor, and lazy,—subsisting chiefly by fishing, fowling, and corrupting the slaves of their rich neighbors. These people are objects both of terror and contempt to the negroes, who call them, significantly enough, "the poor white men." Not wonderful is it that to such citizens Virginia refuses the elective franchise. That any circumstances will ever occur to check the progressive decline of this region, is wholly improbable. It can never regain its former prosperity, until free labor is substituted for the labor of slaves—until the land is regenerated and reclaimed—nor until the health of the country is improved by draining the low grounds. The middle country, which lies betwen the tide water and the Blue Ridge, had, at the commencement of the Revolution, attained very little importance. Even the counties which lie on the stage road between Fredericksburg and Richmond, were then thought by the Assembly, at Williamsburg, to be far enough out of the world to serve as a fit place of banishment for all who were suspected of favoring the royal cause. This region was the first stage for emigrants from the lower country; and its natural advantages being very great, its growth was exceedingly rapid.

The middle district of Virginia has great advantages, in climate, valuable products, and unlimited water power. For the improvement of the soil, it has, in convenient situations, inexhaustible stores of lime and marl. But it appears to have reached the maximum of its population and prosperity. The increase of its white population during the ten years preceding the last census, was only seven and a half per cent.; and, during the same period, the value of the lands and the profits of agriculture fell fully twenty-five per cent. At the same time the people have become more economical in their habits, and more industrious. The absolute poverty of much of the soil, and the extensiveness of slave labor, are the great difficulties which the people have to contend with. Land, which was originally good, has become wholly exhausted by long cultivation in corn and tobacco—and the profits of good land, tolerably well cultivated, will scarcely suffice for the great expense of feeding and clothing the slaves. In general, the farmers and planters make but a bare subsistence, and instances are rare in which their profits exceed two or three per cent. on the capital invested. The counties immediate under the Ridge, and those on the James River and the Roanoke, are the richest and most prosperous. In other counties large portions of the land have been wholly abandoned, and a still larger portion will not sell for the value of the improvements upon it. It is difficult to say what is the average value of the land per acre, but it is agreed that it is not near so high as it was at the last general valuation made in 1817. It was then six dollars per acre, including town property and improvements. A tract of land on the Roanoke, of twenty-two hundred acres, situated within the improving influence of the Petersburg railroad, with a flour mill, dwelling house, &c. which cost ten thousand dollars, and embracing some good corn and tobacco land, was recently sold for twelve thousand dollars, and this was considered a very fair price. The same tract in Pennsylvania or New-York would be worth more than a hundred thousand dollars. There is some land, however, on the margin of James River and the Rappahannock, which will readily command thirty or forty dollars an acre. The current of emigration from this region to the west and south-west flows with increasing fullness and rapidity, carrying with it the best talents, nerve and enterprize of the community, and leaving nothing behind it but exhausted, barren "old fields." Still, I think that this country will be redeemed. Tokens of regeneration are every where visible in zealous efforts for improving the facilities of communication; in increasing industry and agricultural skill; in attempts to introduce manufactures; and in a prevalent sentiment that slavery must and can, in some way or other, in the course of time, be got rid of. The Petersburg and Weldon Railroad is likely to answer the most sanguine expectations of its projectors. Land in its immediate vicinity, which had been abandoned, having again been put in cultivation; the tobacco of the upper Roanoke finds through it a cheap and speedy transportation to market, and many other products which formerly had no value, for the want of a market, can now be turned to good account. The contemplated railroad to Norfolk from the Roanoke will, undoubtedly, be constructed next year, and there is some prospect that a railroad from Richmond to Fredericksburg will soon be made. The magnificent project of uniting James River with the Ohio cannot be considered as having failed, and will not be abandoned. The advantages which must result to the state and to the Union from its completion are incalculable. The water-power on James River and the Roanoke, sufficient for all the mills in Christendom, will, sooner or later, be brought to beneficial action. Manufactures, so far as they have been tried here, have succeeded well, as the recent investment of considerable capital in them at Petersburg fully proves. The applicabilty of slave labor to manufactures is yet to be tested. The experiments which have been made in Georgia and South Carolina show that it may be used to advantage in coarse manufactures. But there is no necessity for employing blacks, for whites can be obtained quite as cheaply. Building materials on the Upper Roanoke and James are very cheap; provisions are cheap and abundant; the best water privileges may be had for nothing, and the market is at home. As to slavery, I think it will work its own cure, by mild and simple means. As the resources of the State are developed, free labor will gradually and necessarily take the place of slave labor.

The Valley district, lying between the Blue Ridge and the Allegany range, is the most fertile, pleasant, and thriving part of Virginia. The farms are generally small, and, to a great extent, are tilled by free and willing labor. Agriculture is conducted skilfully and industriously. Politics are considered as secondary in importance to business. The white population is rapidly increasing, and the number of blacks is stationary or diminishing. The whites in the ten years previous to the last census gained twenty-five or thirty per cent. and the lands command a good price. Public and private improvements there are much better than those which you find east of the Ridge, and the people generally live in more comfort. Tobacco, the bane of a good soil, is not cultivated; wheat, corn, rye, &c. are the chief productions. The towns and villages are flourishing, and the whole country wears the appearance of thrift. Lands on the line of the contemplated improvements have lately been sold as high as fifty or sixty dollars an acre. This country was settled in part by German emigrants from Pennsylvania; but chiefly by emigrants from Eastern Virginia. The German population by their industry and frugality have become rich, and set a good example to their neighbors. Gen. Charles Lee, who settled there after the revolution, used to prophesy that "the Dutch boors would, in time, root out every thing like civilization from the valley." But instead of that, they have only rooted out slavery. The want of cheap and speedy communication with the Atlantic is the only difficulty under which the valley labors, and this difficulty is soon to be overcome, by the railroad from Winchester, connecting with the Baltimore and Ohio railroad, and the projected continuance of the road to the western extremity of the valley. Baltimore will then become the entrepot of the whole valley, unless measures be taken to divert a portion of the trade to Richmond. No country can surpass the valley in grand and picturesque scenery, in pure air, salubrious fountains, and natural curiosities of the most interesting character. The admiration of the traveller is here awakened at every step. The "war between rivers and mountains" at Harper's Ferry, the stupendous natural bridge, the subterraneous palaces of Augusta, the ice mountain of Hampshire, the mountain lake of Giles, and the healing waters of Berkley, Allegany, Monroe, Greenbriar, and Botetourt, are but a part of the objects which arrest his attention.

The district beyond the Allegany range, and between that and the Ohio, embraces about thirty of the largest counties in the state. Remote from market, rocky, mountainous, and almost inaccessible to commerce, it forms a distinct and peculiar region. The principal occupation of the inhabitants is grazing; though some of the land is not only arable, but very fertile. The white population is scanty and sparsely settled, but increasing. The number of slaves bears but a very small proportion to that of the whites. The county of Randolph, for instance, contains twenty-five hundred square miles, three thousand whites, and one hundred and thirty slaves.

They have repudiated the whole Virginia system, and seek to extinguish slavery, and improve their capacities for commerce, agri-

culture and manufactures. In short, their interests, views, habits and situation, assimilate more with those of Pennsylvania and Ohio, than of Eastern Virginia.

Two Crops of Silk Cocoons—Culture of the Mulberry. By the EDITOR.

We have inserted in our columns so much on the subject of introducing the manufacture of silk into this country, that we apprehend our readers may begin to think that we are giving them too much of a good thing; but the following article, from Goodsell's Farmer, is so corroboratory of the favorable accounts heretofore published, that we cannot refrain from inviting attention to it. In confirmation of the statement that a seedling plant of one year's growth will support a worm of each brood, we would state that we, last spring, sowed seed in drills, and although they were allowed to grow very thickly, not more than two or three inches apart, yet they sent out branches from the very surface of the ground to the top of the plant. They grew from eighteen inches to four feet high. Many of these branches could be cut off, and when deprived of their leaves, used for cutting to propagate. We have one of Brooks' Silk Machines, and by a few hours' practice, seasoned with a little patience, found we could reel, double, and twist a very even thread. In the next number of the Farmer we shall give a drawing of this machine, with an account of our experiments with it, and that of other persons.

"SILK.—We have a fine specimen of Sewing Silk, left at our office, which was manufactured by E. Stanley, of Ogden, Monroe county. This silk, which is pronounced by mechanics to be equal to the best Italian, was produced by a second crop of worms, which, Mr. Stanley informed us, was hatched unintentionally.

"This gentleman having commenced the cultivation of the mulberry the last year from seed, procured some eggs, from which he hatched a few hundred worms, which he fed from his young seedlings, rather as a matter of experiment, than for profit. After the worms had formed the cocoons, he selected as many as he wished for the purpose of laying eggs for the coming year, and the remainder of the cocoons he attempted, without any other apparatus than the common wheel, to manufacture into sewing silk, in which he succeeded beyond his expectation, and he declared to us that the process was not as difficult for him as it would have been to have spun either flax or wool.

"The moths which hatched from the selected cocoons were allowed to deposit their eggs upon paper, which he intended to keep until the next year. Not being aware of the necessity of putting them immediately in a cool place, he soon observed that many of the eggs were hatching out. He commenced feeding the young worms, and says that they were equally as healthy as his first. The silk made from them was evidently of a finer quality than that which was from the first crop. By this accidental operation, Mr. Stanley has satisfied himself that two crops of worms may be reared in this climate to advantage. He further stated, that young seedling trees would the year after planting support one worm each of the two crops, or two worms for the season. If this is correct, then the raising of silk may be commenced in our country much sooner than has been anticipated, and the quantity need not be limited. One pound of the fresh mulberry seed sown upon an acre of ground would probably produce one hundred and fifty thousand trees, and if each tree would support two worms the second year, it is reasonable to suppose that they would support four the third year, which would be at the rate of six hundred thousand worms to the acre. This tells large, but nevertheless we think it is possible.

"Mr. Stanley said he found the business altogether more simple than he expected, and that he twisted his silk directly from the cocoons. He thinks that sewing silk can be made in this country without having the prime cost exceed two dollars per pound. Should further experiments prove Mr. Stanley's calculations correct, what a source of wealth the silk business may be to this country.

"Perhaps there is not a county of the same size in the whole United States that exports as much wheat as the county of Monroe, and even the amount of this staple would become a mere trifle compared with the amount of silk which might be produced in this county without diminishing the crop of wheat materially.

"The people of this section have long been inquiring for the best plant, for the purpose of forming hedges, and we believe there is no one that proves so fair to be useful for that purpose as the white mulberry, not taking into consideration their value for feeding silk worms. Should they be found to answer this double purpose, then it will be an object, not only of individual profit, but of national consequence, to have them extensively introduced."

The Use of Saltpetre in Meat. By R. M. W.

[For the New-York Farmer.]

Mr. FLEET:—I have no objection to giving my views of Saltpetre and common Salt. If erroneous, I should be glad to be set right—if correct, they may be of use to others.

The acidifying principle in both salts is the same: the basis of saltpetre is vegetable alkali; of common salt, soda is the basis. Saltpetre is a combination of nitric acid with potash; the common salt is a combination of soda with muriatic acid—both acids are essentially a concentration of oxygen. All animal flesh, especially the hides and sinews, abound with gelatin. There is a principle called tannin, which, when combined with hides, forms leather. I suspect this principle exists in both acids, and is therefore calculated to destroy or solidify the gelatin in meat or hides. If this principle be not destroyed or solidified, putrefaction will soon take place. The potash in the saltpetre tends to preserve, in part, this gelatin, and the common salt used in brine tends to preserve it from putrefaction. Yours, &c. R. M. W.

Potter, Nov. 14th, 1833.

Recipe for Preserving Beef and Hams. By CARLO. [For the New-York Farmer.]

Mr. FLEET:—Take 12 lbs. of common salt, 4 oz. saltpetre, 1½ gallons molasses, or 12 lbs. coarse sugar, and six gallons water—mix intimately, and apply cold to one barrel of beef or hams.

This recipe is said to have been brought from Ireland about one hundred years ago, and has been in use ever since, for curing beef, smoked beef, and hams. It preserves the meat moist, and not over salt; and beef cured by it, after lying eight months in the pickle, has made good soup, having plenty of gelatin. The smoked beef never gets hard and bony, and the hams preserve much of their gelatin. The pickle, however, if kept till warm weather, should be drawn off, scalded and skimmed; 4 lbs. of salt, 1 oz. of saltpetre, and 1 gallon water added, and returned when cold.

In packing the beef, it should be cut in pieces not less than four, nor more than ten pounds, rubbed well with salt, and packed close in the barrel without any salt between the layers, and the pickle put on.

Yours, &c. CARLO.

November 16th, 1833.

Increasing and Fermenting Manures. By the Editor. [Continued from page 330.]

Although it has been very generally inferred, from the experiment of Sir H. Davy, and other chemists, that fermented manures lose a very great proportion of their fertilizing properties, still, in all the nicer operations of culture, particularly by gardeners, there has ever been a preference given to rotted dung. It has been supposed, and urged as conclusive proof, that modern science decided absolutely in favor of the use of long unfermented manures, and against it, in a rotted state. We shall continue to lay before our readers that information which, in our apprehension, will lead them to conclude that neither modern science nor enlightened modern practice is, altogether, disapprobatory of fermented manures. We invite special attention to the following, from Prof. Rennie's recent work on Gardening.

HUMIC ACID AND HUMIN.—In most chemical books, the terms *Ulmic Acid* and *Ulmin* are used, from *Ulmus*, elm; but as its substance occurs in moist, if not all plants, the name is bad. I prefer Sprengel's terms, *Humus*, soil.

This important substance was first discovered by Klaproth in a sort of gum from an elm; but it has since been found by Berzelius in all barks; by M. Braconnot in saw-dust, starch, and sugar; and what is still more interesting for our present purpose, it has been found by Sprengel and M. Polydore Boullay to constitute a leading principle in soils and manures. Humin appears to be formed of carbon and hydrogen, and the humic acid of humin and oxygen. Pure humin is deep blackish brown, without taste or smell, and water dissolves it with great difficulty and in small quantities; consequently it cannot, when pure, be available as food for plants.

Humic acid however, which, I may remark, is not sour to the taste, readily combines with many of the substances found in soils and manures, and not only renders them, but itself also, easy to be dissolved in water, which in their separate state could not take place. In this way humic acid will combine with lime, potass, and ammonia, in the form of humates, and the smallest portion of these will render it soluble in water and fit to be taken up by the spongelets of the root fibres.

It appears to have been from ignorance of the important action of the humic acid in thus helping to dissolve earthy matters, that the older writers were so puzzled to discover how lime and potass got into plants, and it seems also to be this chiefly which is so vaguely treated of in the older books, under the names of *extractive, vegetable extract, mucilaginous matter*, and the like. Saussure, for instance, filled a large vessel with turf, and moistened it thoroughly with pure water, when by putting 10,000 parts of it by weight under a heavy press, and filtering and evaporating the fluid, he obtained twenty-six parts of what he termed *extract;* from 10,000 parts of well dunged and rich kitchen garden mould he obtained ten parts of *extract;* and from 10,000 parts of good corn field mould, he obtained four parts of *extract.*

M. Polydore Boullay found that the liquid

manure, drained from dung-hills, contains a large proportion of humic acid, which accounts for its fertilizing properties so well known in China and on the continent; and he found it also in peat earth, and in varying proportions in all sorts of turf. It appears probable, from Gay-Lussac having found a similar acid, (technically *Azumic acid*,) on decomposing the prussic acid, (technically *Hydrocyanic acid*,) that the humic acid may be found in animal blood, and if so, it will account for its utility as a manure for vines, &c. Dobereiner found the gallic acid convertible into the humic.

Scientific Principles of Manuring.—As the chief food of plants consists of carbonic acid gas, and humic acid, mixed with water, it is clear that every sort of manure, whether it be simple or mixed with other substances in form of compost, must be tried and judged, in the first place, by the proportion of carbonic acid gas and humic acid, which it contains, or may evolve after it has been applied; and in the second, by the quantity of water which it is able to take up and retain. This second test alone must not be trusted to, otherwise bog earth, a very sterile substance in its undecomposed state, might be decided to be the best of all manures; nor will the first test always answer, otherwise chalk, (technically *Carbonate of Lime*,) would appear to be an excellent manure, and so it might be under peculiar circumstances, and would be always, if it could be brought to take up and retain enough of water to dissolve a portion of it, which it can only do by means of humic acid.

The Fermenting of Manures.—It is the common opinion, that every sort of dung, when well rotted and reduced to a uniform dark brown mass, similar to fresh peat, so that it can be cut with a spade, is more valuable than when fresh and mixed with straw and other litter. There can be no question of this opinion being correct, though the doctrine at present held in books seems to oppose it, upon principles deduced from the experiments of Sir Humphry Davy, made before the discovery of the effects of humic acid. The two tests of the quantity of carbonic acid gas contained in rotted and in fresh dung, and the capacities of each for taking up and retaining water, would at once lead to the correct view of the subject, independently of ascertaining the proportion of humic acid.

With respect to water, there can be no question that rotten dung is very much superior, in imbibing and retaining it, to what is fresh, unfermented, or beginning to ferment, as may be easily ascertained in the way already described by those who doubt the fact. With respect to carbonic acid gas, humic acid, and the minor materials of the food of plants, there can be as little doubt of the superiority of rotten dung, which is in fact in a state very nearly approaching to the best leaf mould, or virgin loam, and though a weighed quantity of fresh dung certainly will yield more carbonic acid gas than when this same quantity is allowed to ferment and rot, in consequence of much of it being given off during these processes, yet the weighed quantity of fresh dung will bear no comparison in this respect with the rotted dung. The quantity of humic acid is very considerably greater in rotted dung.

Here then is the state of the question, which is so far one of economy, that there is a certain loss sustained by the dung during fermentation and rotting, in the same way as there is a loss sustained in roasting a piece of beef; but nobody, I think, except an Abyssinian, who likes raw beef cut from a living ox, would try to economise provisions by not roasting his beef, any more than a gardener would in not rotting his dung. The rotted dung accordingly, like roast beef, appears, from what has been now stated, to be altogether of superior quality as food, on a comparison of equal weights of it and fresh dung, particularly with regard to humic acid.

The recent practice of covering up fermenting dung with earth is founded on a smattering of chemistry, without a sufficient knowledge of its principles, for the earth can no more confine the carbonic acid given off during the fermentation of the dung below it, than a gauze balloon would confine gas enough to carry it up into the air; though this covering of earth will undoubtedly check very violent fermentation by partly keeping out the atmospheric air and rain water, the oxygen in either or both of which is indispensible to the process, it being this oxygen which forms the carbonic acid gas by uniting with the carbon in the dung.

Fresh dung, if, like that of rabbits, pigeons, poultry, and sheep, it be somewhat difficult to dissolve in water, will prove injurious, in consequence of the portion dissolved being too acrid, from containing a great quantity of ammonia; and hence it must either be well rotted, with the loss of more than half its substance, or so broken down and mixed with sharp sand, or diffused in water as not to concentrate its ammonia or other acrid principles, which might otherwise *burn* the plants, as it is not inappropriately termed. For the same reason, the draining of dunghills and urine ought always to be diluted with at least three-fourths of water before being applied. In this way they become excellent manures from containing so large a proportion of the important principle of humic acid.

Composts.—It having been found that the most fertile soils are those which contain a mixture of various ingredients, the conclusion was obvious, that soils artificially composed of the same or similar materials, would prove similarly fertile. This gave origin to the various compositions termed composts, whose value must of course be tried, like that of individual manures, by the two leading tests of their proportional quality of carbonic acid gas and humic acid, and their capability of taking up and retaining water.

Compost heaps or pies must be managed on the general principles of chemistry already detailed, particular care being taken to guard against loss. Lime, for example, if mixed in a compost heap with rich old soil, or with rotten dung, will take up and render useless the carbonic acid gas which they contain, and can only be used where there is much woody fibre difficult to be broken down. Bog earth, mixed with fermenting dung, forms a good compost; as does also all vegetable refuse, such as weeds, young shoots of trees, and turf from hedge-banks or road-sides.

Having given the science of manufacturing manures, we subjoin the opinion of a practical farmer. It is contained in answer to numerous questions put by the Board of Agriculture of the Eastern Shore of Maryland, to Gov. Stevens. We would remark, however, in reference to the opinion of Prof. Rennie, respecting the inutility of coverings of some kinds of soils to prevent the escape of evolved gases, that carbonic acid gas being heavier than the atmosphere, it will settle down into the openings, and thus in time become absorbed by the liquids and rains:

What are your means of making manure, and the means you adopt?

Answer.—I am a strong advocate for compost manure, when it can be made with economy, which should be strictly attended to by every farmer. My usual habit is, as soon as I get my wheat trodden out, and my corn secured in the fall, to litter my farm yard (and if my cultivation is far off, I select some warm spot near the field) with leaves and pine shatters, (preferring the former.) I then draw in a quantity of corn stalks, which I repeat at every convenient period, so as to have the greatest part of them in before Christmas, where I pen my cattle, having a shelter for them; my racks are then filled with straw,—the stalks not only afford good feeding, but, when trampled on and broken up, they present an excellent bed to receive the urine and dung of the cattle. During the winter, I draw in dirt, leaves, hog beds, rotten pine stumps, and every thing which I think will add to the quantity and quality of the manure. My horses are well littered with straw, and sometimes with pine shatters; the stables well cleaned out, and the manure deposited near the door in a long bed, where dirt, marl, &c. &c. are drawn on until well covered about six inches deep, the manure again spread on every morning, as taken from the stable, until the dirt is covered about six inches deep, and so continued through the winter, alternating the dirt and manure, which prevents the fertilizing salts of the manure from flying off, and converts the dirt to good manure.

In the spring I select some favorable spot near where I propose to use my manure, which I denominate my *summer cow pen*, into which I draw leaves and shatters, then the remnant of my corn stalks, which are not exhausted during the winter, there I pen my cattle every night, during the summer and fall, until the weather forces me into winter quarters, with positive orders never to turn them out in the morning, until they are hurried round the pen five or six times by the cow-boy, by which means much manure is preserved, which would otherwise be scattered out of the pen, as all stock feel disposed to dung immediately after they are disturbed, not forgetting to replenish my pen whenever I deem it requisite with dirt, mud, marl, weeds, &c. and every thing which will be beneficial, which I use the following spring—for, rest assured, the *manure bank* is the farmer's *gold mine*, out of which he digs all his wealth and independence.

In what state ought manure to be hauled out into the field to impart most benefit to land and crop?

Ans.—On this question a variety of opinions exist, but I will, in a concise manner, state mine. Much depends on the kind of soil; if a hard, stiff, white oak clay bottom, I should not hesitate to pronounce the half rotted manure preferable, inasmuch as it will tend to open the pores, and divide the stiff, adhesive particles, and more freely admit the dews and rains, leaves the land in a better condition, and advances the crop. But should your land be of a different complexion, say light loam or sandy, I would then advise the manure to be applied in a well rotted state near the surface.

Ammonia.—*Mr. Fleet:* In your Farmer of November, sal ammoniac is reckoned among the minerals. I believe it is not such. It is manufactured from soot, and this soot must be the produce of animal excrements, and the animals must be fed on marine productions, such as salt hay, &c. Without these, we shall search in vain for sal ammoniac, I believe. Yours, &c. R. M. W.

Nov. 16th, 1833.

Remarks.—The above refers, we suppose, to page 352, article common salt. We should suppose it was correct to class ammonia among minerals, since it is found native, or in the mineral kingdom. Other salts or minerals besides ammonia are procured from the fluids and solids of animals.—[Ed. N. Y. F.]

Unde tremor terris.—[Virgil.]

Spontaneous Combustion.—*Mr. Fleet:* We frequently hear of spontaneous combustion. It seems to me that such phenomena are easily explained. All fats and oils, whether animal or vegetable, are chiefly composed of hydrogen, and oxygen being an elementary fire, and coming in contact with hydrogen in a gaseous state, will take fire. Now these combustions always take place where oil has been spilled, and is slowly evaporated, or converted by exhalation into hydrogen gas, which, coming in contact with oxygen, will take fire, and if combustible matter be near, it

will be set on fire: thus we see that ships are frequently destroyed when loaded with cotton, and stores which take in quantities, great quantities, of oakum or other combustible matter, and oil is spilled on the floor.

Yours, &c. RATIO.

Potter, Sept. 5th, 1833.

NEW-YORK FARMER.

NEW-YORK, DECEMBER 1, 1833.

THE various means by which useful information could best be collected and diffused are,—1, Forming institutions for that purpose; 2, The establishment of experimental farms; 3, The institution of agricultural professorships; and, 4, The improvement of veterinary knowledge —SINCLAIR.

AGRICULTURAL SOCIETIES AND FAIRS.—In this number of the Farmer we lay before our readers numerous facts illustrative of the prosperity and usefulness of agricultural societies. No person can reflect on these facts and not come to the conclusion, that individual interest and general good are very much promoted by them—so much so as to lead every patriotic man in the country to give them all the countenance and support in his power. Independent of the far and wide spread spirit of improvement which they excite, and independent of the augmented resources which they thus create for the country, they add in various ways to the comforts and happiness of the fireside, or of the sittings under the vine and fig tree.

We will give one or two instances of sales effected by these exhibitions: A gentleman of Albany exhibited some sheep at the Berkshire, (Massachusetts,) Agricultural Fair. An intelligent farmer of the same state saw them, and went to the recent fair at Albany, where he bought the whole flock at 13 dollars each. Mr. Clay, having heard of the superior cattle exhibited by Gen. Van Rensselaer, was induced to offer a price which most of our farmers would be glad to get for a whole barn-yard full of cattle.

Farmers! rise and speak to your assembled representation at Albany. Speak, and you are heard—heard, and you are obeyed—obeyed, because both the fountains of wealth and the channels in which it flows are yours—because over generous, you have made ample provisions for all other classes, and wholly neglected yourselves. A voice in behalf of your sons echoes wide and from far. It says, elevate and render more honorable the profession of a farmer.

SUBSCRIBERS WHO WRITE.—The editor of the Farmers' Register says, "one subscriber who will usefully contribute by his pen, may thus be worth as much as ten others who will furnish merely the aid of the purse." Writing is a pleasant mode of conversing or interchanging ideas. *We* should be pleased to have *our* readers much more sociable than they are.

BONE MANURE.—This manure is strongly recommended in the Horticultural Register, particularly for vines. A little lime mixed with it promotes fermentation.

CUTTING OFF POTATO BLOSSOMS.—We have inserted notices of the increased products from this practice. A writer in the New-England Farmer made an experiment, which resulted in obtaining a less quantity from the row deprived of the blossoms.

MRS. PARMENTIER'S GARDEN.—At page 370 it is said the second sale did not realize that of the first by 25 per cent. It should read, at an advance of about 15 per cent. We derived our information from a person who left before the sale was through. The first lots sold for about 90 dollars, and a few of the last at 500 to 1000. We understand the purchaser offered before the sale 3000 dollars to have the bargain taken off his hands. He was, however, a gainer of upwards of 9000 dollars. Had the sale resulted in a loss, it would have arrested much of the speculation in Brooklyn property.

BURYING BEES.—We make the following extract of a letter from a lady to the Editor. Our correspondents will see the propriety of furnishing us with information that will bear the ordeal of experiment:

"The other day I made a visit to Eliza, and found her digging in the garden a grave for a couple of bee-hives. The honey had been taken from them too late for them to make sufficient for the winter. She had seen an article in the New-York Farmer, stating that bees could be kept under ground with little or no honey. She was, therefore, induced to try the experiment; and if it does not succeed, she thinks she will prosecute you for damages."

WATSON'S RED HYBRID RHUBARB.—An article in the Horticultural Register describes this in many respects as superior. One peculiar characteristic, says the writer, is the production of two separate and distinct crops in a year. It may be plucked from the beginning of April to the end of May. The remaining leaves then perish, but soon others are pushed forth with vigor, which may be gathered through the summer, and preserved with sugar for winter's luxury.

EXHIBITION OF DAHLIAS.—A gentleman who has returned in one of the late packets from England, was at an exhibition of dahlias at Cambridge, in September, shown by the Horticultural Society, and was told that upwards of *one thousand varieties* of dahlias were exhibited.

FEMALE SEMINARY.—The Poughkeepsie Journal records the following, which we transfer to our columns in approbation of so worthy an enterprise. Let the wealthy and patriotic in every village follow the example by similar union of efforts.

We mention with pride, as an evidence of public spirit now prevailing in our village, that the beautiful residence of Mr. John Lockwood, situated on Mansion and Garden streets, was purchased a few days since by an association embracing twelve of our most active and influential citizens, for a FEMALE SEMINARY. The grounds about the house, amounting to about five acres, are elegantly formed and covered with a variety of shade trees, shrubbery, fruits of the choicest variety, &c. &c. constituting altogether a most inviting situation. The house is already spacious, and it is contemplated to erect such additions as will afford ample and convenient accommodations for a large number of young ladies.

The association is composed of the following gentlemen: Nathaniel P. Tallmadge, George P. Oakley, Walter Cunningham, Paraclete Potter, Elias Trivett, Abraham G. Storm, Henry Conklin, Jacob Van Benthuysen, James Grant, jr. Peter P. Hayes, James Bowne, and Stephen B. Trowbridge. These names are a sufficient guarantee that every thing about the establishment, the edifices, teachers, in short its entire management, will be so arranged and so conducted as to entitle it to a large share of the public confidence and support.

The price paid for the premises, together with another lot of about four acres, lying north of Mr. Geo. P. Oakley's residence, was *twelve thousand dollars.*

BUTTER FROM CATSKILL.—The article at page 364 was but just given to the printer when we received the following from a Catskill paper of the 14th ult.:

The quantity of butter shipped from this place the present season is thus far unusually large. We were induced by curiosity to ascertain the quantity forwarded by two of our principal freighting establishments during the last week. It was as follows:

By Penfield, Day & McKinstry's line, 3227 firkins, 90 half firkins, 33 pails. By Donnelly, Cookes & Co.'s line, 1350 firkins, making in all at a moderate calculation, 568,846 lbs., and worth in market $89,515 36.

If the bread in this world is not well buttered, it is not the fault of Greene and Delaware.

EGGS OF THE SILK WORM.—On opening a cocoon and carefully taking off the shell of the chrysalis, the miller or perfect insect is exhibited entire. The insides of the miller appear to be composed wholly of eggs, without the least appearance of any other parts or members. It requires leisure and patience to ascertain the number of eggs in a single insect—a little more than we possess. Assigning the undertaking, therefore, to one of the fair sex, who sometimes, to say the least, possess the above requisites, we found the number to be about three hundred. Multiplying this number by 100, the product is 30,000 eggs, which will produce nearly as many worms. What ample and beautiful provision Providence has made to render this insect useful to man! If each one only laid a very few eggs, nearly the whole brood would be required to propagate the race, leaving so few cocoons that could be reeled, that none but queens and princesses could afford to wear the "royal purple."

IMPROVED LIVE STOCK.—The Hon. Henry Clay, while at his recent visit to Albany, offered for a bull and a heifer calf, six months old, belonging to Gen. S. Van Rensselaer, jr. four hundred dollars, which were refused.

They were from the famous stock of short horn Durham cattle, imported by Gen. S. Van Rensselaer in 1823, from the herd of Mr. Champion, England.

We are also informed that Mr. Bement, of Albany, is about importing some of the late improved breed of Durham cattle, as well as some of the much esteemed Southdown sheep.

Mr. Hawes, an English gentleman, lately settled near Albany, brought out with him last fall some of the Berkshire breed of hogs, which were very much admired at the fair, and the demand for the pigs was so great that he could not supply one half the demand.

We have two most beautiful pigs, or rather hogs, of this breed, three months old, obtained from Mr. Brientnall, of Goshen, N. Y. We have not had the pleasure of seeing Mr. Hawes' pigs, but if they are superior to ours, there is no wonder that the demand exceeds the supply.

VALUABLE HEIFER CALF.—The famous white cow, Dulcibella, an imported full bred improved Durham Short Horn, exhibited by Mr. C. N.

Bement, at the late cattle show and fair, held at the city of Albany, has since produced a heifer calf, for which, we are informed, he refused fifty dollars before she was twenty-four hours old.

To prevent Frost throwing out Plants.—It is the effect of frost to unite more firmly the finer parts of the soil, and to disengage and throw out large substances, such as posts, stones, and plants not well rooted. To prevent young and newly transplanted plants from being thus injured, press down the ground round them. Strawberry beds and fields of grain should be rolled. It should be done early, rather than late in winter.

Newtown Pippins.—At page 325 it is stated that Dr. Underhill realized 270 bushels of apples from his farm at Sing Sing. It should have read 270 *barrels*.

Horizontal Trenching.—Writers in the Southern agricultural papers dwell much on the importance of preventing the soil on declivities from being washed away. To prevent this, horizontal trenches to carry off the water are made, about three quarters of an inch fall in the distance of twelve feet. By this means the water escapes gradually without injuring the soil, and without disfiguring the field.

Native Grapes and Domestic Wine.—In the Cincinnati Chronicle of October 2d, we find a lengthy editorial notice on this subject, from which, by request, we make an extract. Mr. Longworth is highly and justly complimented for his many years' devotion to experiments to establish the true relative worth of American grapes and wines.

The judges of wines report that N. Longworth, Esq. is entitled to the premium for a rich light wine, made from the Catawba grape, at his vineyard in Delhi township, which was pronounced superior to two samples of wine, exhibited in competition, ascertained afterwards to be Rhenish wines of high reputation, the Johannesberger and Geisenheimer, imported by Boker, of New-York. A sample of red wine, from a native grape, was also produced by Mr. Longworth, which, in the opinion of the judges, wants nothing but age to place it in fair comparison with many of the well known wines of Europe.

Daniel Gano,	Ethan Stone,
D. K. Este,	V. C. Marshal,
Th. D. Carneal,	J. Strader,
J. S. Armstrong,	D. H. Horn,
W. H. Harrison,	R. Buchanan.

N. B.—The bottles of wine were all of the same size and shape, and the judges were not apprised till after the decision was made which bottles contained the domestic wines.

So far as we have been enabled to gather the results of Mr. Longworth's experience, they may be briefly summed up as follows:

1. That the grape may be successfully cultivated in the Miami country.
2. That the native thrives better, and produces a finer wine, than the foreign grape.
3. That among the native grapes the Catawba has the preference as a wine grape.
4. That the rearing of the vine, and the manufacture of wine in this section of country, may be made profitable.
5. That by the use of sugar and alcohol, two ingredients which enter more or less into nearly all the foreign wine brought to this country, wines may be made in Ohio not inferior to the imported.

Since writing the above we have learned another fact, strikingly illustrative of the richness and abundance of the vintage in this region. Last year Mr. Longworth selected in his principal vineyard, four miles below this city, the *one-fourteenth* part of an acre, from which he manufactured 105 gallons of wine.

Albany County Agricultural Society.—It would seem expedient that the New-York County Agricultural Society should become the re-organized old society, especially if the funds now in the hands of the treasurer of that association would thereby pass into the possession of the present treasurer, and thus become useful. We call attention to this subject.

At a meeting of citizens from different towns in the county, convened at the City Hall on the 13th of November, Jacob Ten Eyck, Esq. in the chair, and John McCarty, Esq. Secretary, the utility of an Agricultural Society having been discussed, and it appearing that many persons had signified in writing a desire to become members, it was thereupon

Resolved, That it is expedient to re-organize the Albany County Agricultural Society, under the old constitution and act of incorporation; and that the meeting now proceed to the choice of officers;

Whereupon the following persons were appointed:

Stephen Van Rensselaer, President,
Jacob Ten Eyck, } Vice Presidents.
John Schuyler, jr. }
Volkert P. Douw, Secretary,
Caleb N. Bement, Treasurer.

Aaron Van Rensselaer, jr. Charles R. Webster, Aaron Thorp, Teunis Van Vechten, Jas. L'Amoureux, of Albany; Wm. N. Sill, of Bethlehem; Eli Hutchinson, of Rensselaerville; Abraham Verplanck, of Coeymans; Elijah Cheeseborough, of Guilderland; Nathaniel Gallup, of Bern; Matthew Bullock, of New-Scotland; Fred'k Basset, of Knox; Anthony Miller, of Westerlo; and Lucas Witbeck, of Watervliet, Executive Committee.

Resolved, That the Executive Committee be requested to meet at this place on the second Thursday of December next, at 12 o'clock, to complete the organization of this society, and to transact other necessary business.

Resolved, That persons holding subscription papers in relation to the society be requested to return them to the Secretary or Treasurer, previous to the aforesaid meeting in December.

Resolved, That James L'Amoureux, John Haswell, and Caleb N. Bement, be a committee to wait on the late Secretary and Treasurer of the society, and to request from them any books, papers, or funds remaining in their hands which may belong to the society.

Resolved, That John Townsend be a delegate to represent this society at the next meeting of the New-York State Agricultural Society.

Resolved, That these proceedings be published. Jacob Ten Eyck, Chairman,
John M'Carty, Secretary.

Apple Butter.—The following was communicated, we believe, to Goodsell's Farmer:

"First boil down the best flavored cider, of selected fruit, (and sweet is the best to keep,) to two-thirds of the quantity put in. To every barrel of cider put in six bushels of apples of best quality, pared, quartered, and cleaned of the cores, and free from rots and bruises.

"As soon as boiled down one-third, as above, feed in the quartered apples as fast as they boil away, which must be done in brass or copper. It is best to have two kettles, in order to supply the finisher from the other, which keeps it from boiling the apples too much. It will require from twelve to eighteen hours constant and moderate boiling, when it must be stirred at the bottom to prevent its burning, by a long handle, with a piece of wood three or four inches wide attached to the other end.

"To know when it is done, cool and try some of it on a plate, till the liquid ceases to run from it. Towards the close of it some put in cinnamon, cloves, and alspice.

"If only one kettle is used, each parcel of raw apples must be boiled or brought down too much before another supply is added. If it scorches in the operation it is ruined. As soon as done, it must be taken out immediately from the kettle into wooden vessels, to cool, and afterwards into crocks, or stone-ware, or wood; but in order to keep it best in summer, crocks or stone-ware are to be preferred."

Large Crops of Corn, Potatoes, and Turnips.—It affords us pleasure to record such instances of successful culture as the following, from the Poughkeepsie Journal:

Mr. Potter: Dear Sir,—Perusing with much pleasure your valuable Journal, and observing the interest you take in agricultural communications, I think it proper to state to you as an incentive to agriculturists the produce of several crops raised by E. Holbrook, Esq. this season, on his farm at Hyde Park, viz.:

Indian corn, 70 bushels 1 peck per acre, (shelled.)

Pink eye potatoes, cultivated at a small expense, nearly the whole having been performed with the plough, 780 bushels per acre.

Rutabaga turnips, 1089 bushels, weighing 42 lbs. per bushel, or 33 tons 3 quarters 18 lbs. nett per acre.

The measurement of all was made by disinterested persons on the farm, who are willing to testify to the production.

Should you think this worthy a place in your paper, you are at liberty to publish it.

An Agriculturist.

Hyde Park, Nov. 12, 1833.

Sugar and Cotton Crops.—These crops appear to have received considerable injury by the early frost, particularly the former. From the Savannah Georgian, of the 12th of November, we extract the following:

This crop, so important to the Louisiana planter, is likely to be injured for the coming year as well as this. The Louisiana Advertiser of the 1st inst., in relation to this subject, says—The early mists of last week have done much damage to the cane; in many places so much, that half the quantity of sugar, which was calculated on before the frosts came, will not be made. On Mr. Shepherd's estate alone it is calculated that the frost has cost a loss of three hundred hogsheads. Other plantations have sustained little or no damage, particularly in the vicinity of the city, where the fogs from the lakes, united with that of the river, had entirely protected the cane. The extreme dry weather, although unfavorable to the general health of the country, is very favorable to planters under existing circumstances. There is much well founded apprehension as to next year's crop, as there is very little cane left which will answer for seed. The injury to the cotton crops is not so considerable; the greater part of the crops having got out of the way of frost, or at least the damage being only partial.

The Floridian of the 24th inst. says—The Florida crop of cotton will exceed that of last year, owing to the greater quantity of ground in cultivation. The quality is very superior in consequence of the favorable weather for harvesting which we have had during the season.

Marl.—The southern part of New-Jersey, eastern Virginia, portions of Delaware, and Maryland, are destined to derive great benefit from the use of marl as manure. An increased attention is daily given to it. It is found diffused extensively, and in inexhaustible quantities.

Platylobium Obtusangulum, *Obtuse leaved Flat Pea*.—Seeds of this beautiful plant were sent from Van Dieman's Land by Dr. Scott, to the Glasgow Botanic Garden. The flowers are large, and of a rich orange color. The plant has hitherto been treated as a hardy inmate of the green-house. It should be potted in sandy peat, and may be propagated by seeds.—[Bot. Mag.]

PATRONAGE OF THE FARMER.—*Mr. Fleet:* I am not a little surprised that the Farmer still wants patronage. It is a lamentable fact that too many of our farmers still

"Whistle as they go, for want of thought."

'Tis no wonder that too many of them remain poor and ignorant, if they will not take some pains to acquire the knowledge which belongs to their occupation. Scarce a day passes but I have evidence of their incapacity in many important items, especially in the management of their sick cattle, hogs and horses. It is a sad mistake to suppose that such a publication as the Farmer is intended to teach them exclusively the art of farming: it is intended to give many useful hints in every department of domestic economy, and cannot help but be useful even to the learned, and much more so to those who do not make learning their object. I have derived many useful hints from such publications, and think they can hardly be too much multiplied, or too diffusely distributed.

With every wish for the success of the Farmer, I remain, yours, &c. R. M. W.

Potter, Nov. 16th, 1833.

AGRICULTURE.—Agriculture is the art of tilling the soil, and drawing from thence the comforts and sustenance of life. Agriculture is called the school of industry. It is the corner stone upon which all other arts have their foundation—the key-stone of that *political arch* for which our forefathers bled upon the field of battle. They reared this monument of their glory, whose very mortar was tempered with their vital blood.

It was the Farmer of Mount Vernon that led our ancestors into the battle-field, and cheered their hearts with shouts of victory. It was he, the immortal WASHINGTON, that achieved our country's freedom and rescued us from proud Britain's galling yoke. He knew well how to gain our independence, and knew better how to preserve it. Were our rulers of that description of republicans, an attempted dissolution of our Union would have never blackened the pages of her history. It is the farmer that participates in the independence of the nation. To kings he pays no tribute, to foreign priests no tithes. It is the scientific farmer that can read in the extensive volume of Nature, and to him is unfolded its hidden mysteries.—SHELDON P. GILBERT.

Rensselaerville, N. Y.

LUCERNE.—A correspondent inquires in the fourth number of "The Farmers' Register," whether Lucerne has succeeded in Virginia. I have tried it successfully on a small scale, and have seen it tried with equal or greater success in Richmond County, at Mount Airy. In both cases, it was sown both in drills and broadcast; and both cases proved the superior efficacy of sowing in drills. The superiority of this mode of sowing is, I think, more than equivalent to the increased labor of cultivation. I sowed it in drills about fifteen inches apart, so that a hoe could work well between each row; and between every three rows, I left a space of two feet, so as to enable me to clean and work it thoroughly. On a larger scale, I would sow in drills sufficiently wide to admit the cultivation of it by a small one horse plough.

Lucerne, called by the Spaniards *Alfalfa*, is cultivated most successfully in Mexico and Colombia, and constitutes the chief food of the horses and mules in those countries. Indeed, they require and often get nothing but Lucerne in a green state. There it is cultivated in drills, about two feet wide: as it grows the earth is drawn to it in a high ridge. It is frequently irrigated, and when it is well cultivated, grows from two to three feet high. Lucerne demands a good deep soil; its root penetrates at least three feet into the stiff clay which forms the substratum of the ground where I sowed. The depth to which the root goes renders it liable to be less affected by drought than any of the artificial grasses—but frequent irrigation tends, in a wonderful degree, to improve it. It may be cut in the spring three or four weeks earlier than red clover. ED. F. TAYLOE.—[Farmers' Register.]

THE APPLE.—If the branch of an apple tree be taken off whilst it is in blossom, and immediately planted in swampy ground, it will take root and bear fruit that season. This mode has been tried with success; therefore, it is probable that the branch of a pear, peach, plum, mulberry, or any other fruit tree, if taken off in spring or summer, whilst the tree is in full sap, will also take root and become a new tree. Thus, choice fruits, such as the old nonpareils, golden pippins, &c. may be for ever sustained.—[Hor. Reg.]

WHAT HAS BECOME OF THE WEEVIL?—About twenty years past, the black weevil were very numerous; they decreased gradually, and I have not seen one for eight or ten years. The white weevil have likewise been numerous till last year, when none appeared, neither are any to be seen this year. There is another kind of weevil I have known to do considerable damage; they are about one third the size of the white weevil, of dark color, slender, and have feeders like a wasp; these have likewise disappeared for several years.

I have not this year seen a single tobacco fly.

It is requested that inquiry be made throughout the United States, through means of the newspapers, whether or not these insects are yet to be found in our land, and if so, where? From an inquiry and investigation of this subject, benefit may arise, otherwise than that of gratifying curiosity.—[Lynchburg Virginian.]

ANIMATED OATS.—The oats were part of the produce of a few which were obtained, I believe, from some ship that arrived in the James river, during the year 1831. They reached the friend of whom I received them, through so many different hands, that he was not able to learn either the name or the origin; but to me they really appear to have been formed by nature in sportive imitation of *insects;* nor does it require any great stretch of the imagination to suppose them endowed with life. This *insect*, or *animated oat*, is somewhat larger than the common oat, the body being covered with a thick close coat of brown fur, or rather, in appearance, short hair. It has two long beards or horns, knee bent, and in other respects nearly resembling the legs of the grasshopper. Before the seeds are separated from the plant, there is a further likeness to the insect tribe, each one having two leaves, which serve to inclose the seed when green, but which, in its ripe state, stand off like short wings. These, however, being then but slightly attached, are soon lost. The *form*, however, of the oats, is the least curious part of their resemblance to insect life, for when made suddenly wet, and then laid singly upon a table, their legs, as I have described them, begin slowly to move, and, acting as levers on the table, turn the seeds over and over, giving to them the exact appearance of some little animal just struggling into being. This motion continues as long as the grain is moist, but as soon as dry, all again is perfectly still. Should you, or any of your readers, be able to throw additional light upon the subject, I shall be pleased to get it through the medium of some subsequent number of the Register.—[Farmers' Register.]

Load of a Locomotive Engine. By HENRY D. BIRD. [From the Petersburg Intelligencer.]

GENTLEMEN,—The following account of the performance of one of our engines will no doubt interest you and many of your readers.

On Monday last, the Liverpool brought in a train, consisting of 15 cars, and one coach, carrying 127 bales of cotton, 364 bushels of wheat, 162 bushels of corn, and about 30 persons, including passengers and agents of the company. The gross weight in motion may be summed up as follows:

Produce and passengers,	83,620 lbs.
Cars, Coach and Engines,	67,500
	151,120

or nearly 62¼ tons. The weight of produce alone was upwards of 35 tons. This load was put in motion with great ease by the engine, and on level ground was carried at a speed of 15 miles per hour. It was set in motion on ascents of 30 feet to the mile, (on which we had occasion to stop, and set down passengers,) and carried them up at a rate varying from 8 to 10 miles an hour.

This is the largest load which has ever been on the road at any single time, and when we compare it with the small size of the engine, and consider the various ascents on the railroad, it may well be called immense. The Liverpool weighs about five tons, and has 9 cylinders, with a stork of 18 inches, and drives four wheels. Her general working pressure is 50 pounds, ranging up to 60, which the lock-up valves blows off. I add the technical details in order that the performance of this engine may be justly appreciated by professional men.

Yours, respectfully, HENRY D. BIRD.

CUTTING UNRIPE WHEAT.—The cutting of wheat eight days before it is ripe secures it from accidental loss by shaking, the grain is of a finer quality, but the quantity per acre, *by weight*, is *less;* still the quantity of flour is greater, for the deficiency is in the bran. Wheat so cut appears to be equally liable to attacks from the weevil as that which is cut ripe.—[Hor. Reg.]

STRENGTH OF LOCUST.—Experiments with seasoned locusts an inch in diameter resulted in suspending to it 20,000 lbs., nearly one-third the strength of iron.

RECEIPTS OF PRODUCE.—It would be well for the editors of every considerable town to ascertain the quantity of produce received at the stores and landings. Such statistical information is very satisfactory, and serves to give some idea of agricultural prosperity, and, by appropriate comparisons, to stimulate to exertion. The following is taken from the New-York Daily Advertiser, and shows the quantity received down the Hudson from the canal and different landings.

From Sept. 1st to 30th, 1833, inclusive—Flour, 105,033 barrels; ashes, 1859 do.; beef, 207 do.; whiskey, 2577 do. 81 hhds.; wheat, 12,404 bushels; corn, 24,160 do.; oats, 63,207 do.; rye, 3,575 do.; barley, 6,597 do.

From October 1st to 31st, 1833, inclusive—Flour, 102,003 barrels; ashes, 2188 do.; beef, 3880 do.; pork, 150 do.; whiskey, 25,017 do. 145 hhds.; wheat, 5060 bushels; corn, 22,783 do.; oats, 30,100 do.; rye, 5150 do.; barley, 20,000 do.; cheese, 2529 casks.

From November 1st to 30th, 1833, inclusive—Flour, 114,623 barrels, 993 half do.; ashes, 1583 barrels; oats, 42,700 bushels; corn, 20,000 do.; rye, 3,700 do.; cheese, 2,930 casks.

METEOROLOGY.—The remarkably severe frost on the 4th of August was another proof of the fact, that plants may be strongly frozen, although the air remains constantly several degrees above the freezing point. The kidney beans, and various other productions, were materially injured at Chatsworth, and other places around, whilst the thermometer, hanging against a north wall, stood at nearly 40 degrees Fahr. Probably the heat retained by the bricks might considerably affect the mercury, but we have found that the white frosts prevalent in spring and early in the autumn seldom sink the mercury very low in the tube, since it often stands above the freezing point, while at the same time vegetation has met with a complete stagnation.—[Hor. Reg.]

SENECIO OBOVATUS, OR SQUAW WEED.—In the August number, page 227, we gave a retrospective notice of this plant. There it was stated that it was not poisonous to sheep after the flowering season. In a recent communication to the Columbia Sentinel, Mr. Tilden says:

We have kept sheep in the same pasture every year since 1828, carefully removing them during the flowering season. They have received some trifling injury every year, occasioned, it was thought, by the blossoms putting forth earlier, or continuing longer, than usual in some place where they were not observed. But the present season has given satisfactory and fatal evidence of injury produced by eating the leaves of the plant. Early in the spring, we put into the pasture one hundred healthy wethers. During the time of ploughing for planting, and long before any flower could be discovered, four sheep were found dead. The flock were immediately removed, and after shearing, when the stalks of the plant were dry, the same flock were again turned into the lot. Shortly after, eight more were found dead, and many others diseased. Being now convinced that the mischief was occasioned by the eating of the leaves, we removed the flock with the determination never again to risk sheep upon that pasture. The plant has greatly increased, and spread over a considerable portion of the lot, while there is very little of it elsewhere.

SMOKY CHIMNEYS: *Economizing Fuel and Lighting Private Dwellings.*—Among the sufferings arising from the limited diffusion of science, that from smoky fire-places is by no means the least. Independent of the direct inconvenience of smoke in the room, dangerous colds are often taken from hoisted windows or opened doors. What a beautiful picture of comfort is presented on entering, in cold December day, an apartment, the inmates of which have red and tearful eyes, and stand or sit shivering in currents of cold air! Count Rumford observes that the general fault of common chimneys is the greatness of the opening at the throat. The following is a condensed view of some of his rules:

"1. The *throat* of the chimney should be perpendicularly over *the fire*, as the smoke and hot vapor which rise from a fire naturally tend *upwards*. By the *throat* of a chimney is meant the lower extremity of its canal, where it unites with the upper part of its open fireplace. 2. The nearer the throat of a chimney is to the fire the stronger will be its *draught*, and the less danger of its smoking; since smoke rises in consequence of its rarefaction by heat, and the heat is greater nearer the fire than at a greater distance from it. But the draught of a chimney may be too strong, so as to consume the fuel too rapidly; and, therefore, a due medium must be fixed upon, according to circumstances. 3. That *four inches* is the proper width to be given to the throat, reckoning across from the top of the breast of the chimney, or the inside of the mantle to the back of the chimney; and even in large halls, where great fires are kept up, this width should never be increased beyond 4½ or 5 inches. 4. The width given to the back of the chimney should be about *one-third* of the width of the opening of the fireplace in front. In a room of middling size, *thirteen inches* is a good size for the width of the back, and 3 times 13 or 39 inches for the width of the opening of the fireplace in front. 5. The angle made by the back of the fireplace and the sides of it, or covings, should be 135°, which is the best position they can have for throwing heat into the room. 6. The back of the chimney should always be built *perfectly upright*. 7. Where the throat of the chimney has an end, that is to say, where it enters into the lower part of the open canal of the chimney, *there* the three walls which form the two covings and the back of the fireplace should *all end abruptly*, without any slope, which will render it more difficult for any wind from above to force its way through the narrow passage of the throat of the chimney. The back and covings should rise 5 or 6 inches higher than the breast of the chimney. 8. The current of air, which, passing under the mantle, gets into the chimney, should be made *gradually to bend its way upwards;* by which means it will unite *quietly* with the ascending current of smoke. This is effected with the greatest ease and certainty, merely by *rounding off* the breast of the chimney, or back part of the mantle, instead of leaving it flat or full of holes and corners. Fig. 1 shows the section of a chimney on the common construction, in which *d e* is the throat.

Fig. 1.

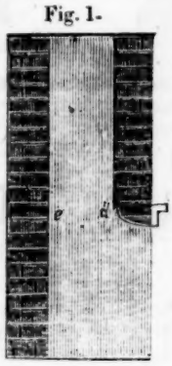


Fig. 2.

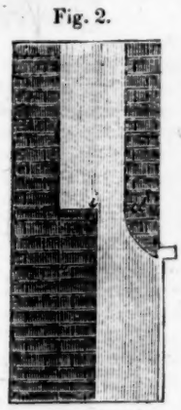


Fig. 2 shows a section of the same chimney altered and improved, in which *d i* is the reduced throat, four inches in the direction *d i*, and thirteen inches in a line parallel to the mantle."

[Remainder of this article we extract from the Edinburgh Quarterly Journal of Agriculture:]

The next point of consideration is the means of applying, with the greatest advantage, the fuel already described, and the means of distributing the heat in our apartments. Three different modes have been adopted,—that of the open fire, the common and the heated air stoves, and also the agency of steam. In the first method, which is the most generally adopted in this country, considerable saving of fuel may be effected by attending to the following remarks. Since the heat that a room receives from an open fire arises chiefly from radiation and reflection, it is important that the position of the grate in which the fuel is burnt be attended to, and of this the position of the covings has a considerable influence. These, when placed at a proper angle, give out a large portion of heat by reflection, in aid of that sent out direct from the front of the fire-place by radiation. The angle that is considered the best for effect is that of 45°. In fixing grates, the less the quantity of solid matter that is used, so much greater will be the heating effect of the fire, as such solid matter serves as a conductor to carry off heat in a direction contrary to what is wanted. The flue also has its share of influence. This ought to be as large as possible, to be regularly formed, free of abrupt turns, and to have a smooth surface; the throat, or lower part, should be somewhat contracted, and the chimney top ought to be sloped upward, or brought to a comparatively thin edge, instead of the level surface too frequently adopted. It has been ascertained by experiment that a well constructed grate will consume about 1 lb. of coal per hour for every three inches of its length,—that is to say, a grate of 15 inches fire-place will burn 5 lbs. of coal per hour.

Heating apartments by means of stoves, though much resorted to on the Continent, has never to any extent been introduced into Britain. In the common stove the heat is procured entirely by radiation from the surface of the stove and flue; but it is found not to afford such a salubrious atmosphere as the open fire, where a constant and rapid current of air is received and passed through the room. *Heated air* stoves have of late years been successfully employed for heating large establishments, as hospitals, churches, &c. In this, the stove is usually at a little distance from the apartments to be heated. A current of air is heated by passing it over a cockle, from which it is carried into flues to the different points where its effects are required. This appears to be an economical method of heating such large establishments, but it seems not so well adapted to ordinary dwelling houses.

The last method of heating apartments, that we have to notice, is by steam. This powerful agent, besides its being so admirably adapted to impel machinery, appears also to be the most economical for the diffusion of heat through a suite of apartments, and has been adopted with perfect success in many of our manufactories. In these, the practice is to carry a system of cast iron pipes through the apartments to be heated. Steam is received into these from a boiler; the metal is heated, and gives it off again by radiation to the apartment. This, though a very effective mode of accomplishing the object in such situations, is yet of a nature not suited to the elegance of modern dwellings, more especially as the open grate forms an ornament of no small importance in our best rooms. Could the prejudice, however, be once overcome, there could be no difficulty of introducing the system of heating by means of steam into all sorts of dwellings, and the following method of arranging the apparatus is submitted.

In the kitchen a boiler of considerable dimensions is to be set in a furnace, with all the requisite appendages of safety-valve, feed-pipe, &c. A large steam pipe passes from the boiler, through the kitchen, and along the passages, branches from which enter every apartment, each provided with a stop-cock, to shut off the supply of steam when requisite. To determine the size of the boiler, we shall take a particular example—a house of 50 feet by 20 feet. To heat this house, the boiler has a capacity of 10 cubic feet, and being of the usual waggon-shape, its dimensions are 3 feet long, 2 feet wide, and 2 feet deep; such a boiler

requires a supply of water equal to 4 cubic feet for every 12 hours it is kept boiling, and a bushel of coal is sufficient to keep a constant supply of steam for a day. The same boiler may be made subservient to the ordinary purposes of the kitchen by allowing the steam to pass into a properly constructed vessel. Perhaps the best construction for this is, that the vessel intended to contain the fluid that is to be boiled should be incased within another of the same form, but leaving a space all round the sides and bottom to contain the steam, having a stop-cock to draw off any water that may be condensed during the operation.

Any number of such vessels may be ranged upon a stand, each connected by a branch and stop-cock to a steam-pipe from the boiler, and they may be all made to boil together, or any one or more of them, as may be required. The outer surface of these cooking vessels should be kept bright, in order to prevent the loss of heat by radiation, while the steam-pipes for heating the house should be kept black on the surface, to promote radiation as much as possible. For this reason, pipes of cast iron are better for heating rooms than those of tin plate. With the diameters equal, it has been found that double the length of tin-pipe is required to yield the same quantity of heat that would be derived from cast iron. With cast iron pipes of four inches diameter, a room of ordinary dimensions may be kept at a temperature of 62° with a boiler whose entire capacity is six cubic feet. In constructing an apparatus of this kind, the steam-pipes should be all laid with an inclination towards the boiler, that the condensed steam may run back to the boiler, thereby supplying it with hot instead of cold water, by which a saving of fuel is effected. In this variable climate, especially in winter, much inconvenience is often experienced in the drying operations of the laundry: this might be obviated by applying steam to that purpose, in a room properly fitted up.

II. ECONOMY OF LIGHTING PRIVATE DWELLINGS.—In this branch of the subject I shall pass over the ordinary methods of procuring light from oil, tallow, wax, &c. and consider only the modern improvement of lighting by gas procured from coal—an invention which must be considered amongst the most remarkable discoveries of this discovering age. It is not necessary to go into a historical detail of the steps by which the discovery was effected; our purpose will be better answered by giving an account of a small gas apparatus which was constructed, and has been kept in use for two years, for lighting a small private house in the country, remote from gas works, properly so called.

The first attempt at this apparatus originated in the idea of placing a retort in the kitchen fire. It was soon found that the heat of an ordinary fire is insufficient to decompose the coal in the retort, so as to yield the full quantity of gas that might be expelled from it. It was also found to be very inconvenient in other respects. Recourse was now had to the erection of a small house to contain the whole apparatus. The dimensions of this building were twelve feet long by nine feet wide and nine feet high. Before describing the apparatus it may be well to glance at the principles on which the process of making coal gas depends. It is to be observed that every kind of coal yields gas; but the different kinds yield products which differ widely both in quantity and quality. Cannel coal has been found to yield not only a greater quantity, but also a purer gas, than any of the other species of coal, and, as a matter of course, is always to be preferred when it can be procured. The gas is extracted from the coal by a process of distillation, whereby the volatile parts are driven off in the form of a crude gas, combined with a variety of other substances, the principal of which are tar and water of ammonia. When the gas has left the retort in which the distillation is carried on, it is first freed of the tar and water by condensation in vessels exposed to cold; it is then brought into contact with lime, by which the remaining portions of offensive matter are absorbed: this consists chiefly of sulphur, which, being combined with part of the gas, forms sulphuretted hydrogen, but the lime having a strong affinity for that substance, they combine, and leave the gas in the state of carburetted hydrogen, sufficiently pure for use.

The apparatus now to be described is represented in the two annexed cuts. Of these fig. 1 is a ground plan of the house and apparatus, and fig. 2 being a prospective view of the same, in which the front wall of the house is supposed to be removed; the same letters of reference applying to both figures. A is the furnace with the retort; the latter is 15 inches long and 5 inches diameter, of cast iron, and contained a charge of 8 lbs. of coal. To the

Fig. 1.

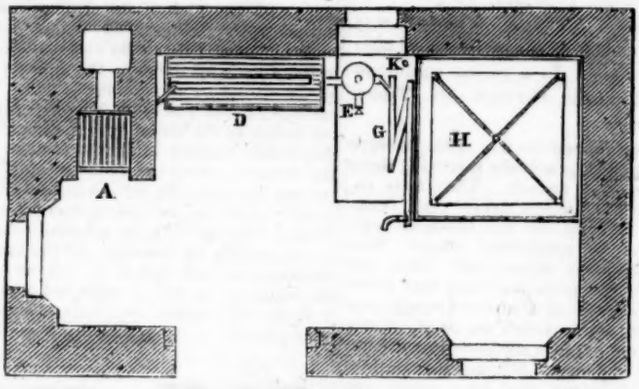
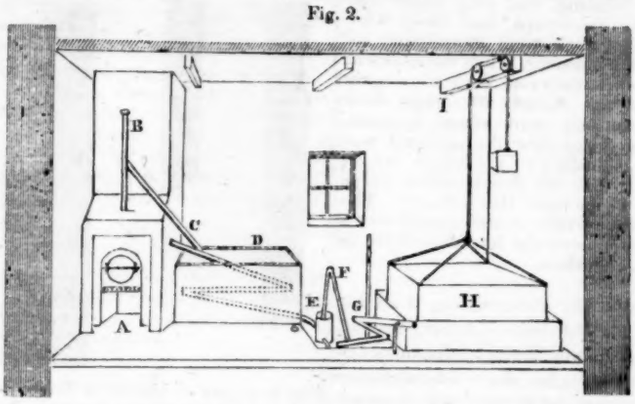


Fig. 2.



upper side of the retort, and near its mouth, is joined an iron pipe, B, about one inch in diameter, left open at top, for the purpose of cleaning off the crust of tar that forms on the inside, but while in operation the opening was closed with a wooden plug. The sloping pipe, C, conveys the gas onward to the cooler or condensing vessel, D. This is an oblong trough, which being kept full of cold water, and the pipe which thus conveys the gas being made to traverse the trough in the direction of the dotted lines, having at the same time an inclination towards the tar cistern. This retardation and cooling promotes the deposition of the tar and watery parts, which are borne forward by their own gravity along the slopes of the pipe, while the gas thus separated is pushed onward by the pressure from the retort, until they arrive in the cistern E. The tar and water are deposited in the bottom of this vessel, which is air tight, except by the insertion of the bent pipe F, by which the gas is allowed to pass off towards the purifying vessel. The tar cistern is also furnished with a plug in the bottom, by which the liquids can be drawn off when they accumulate. The purifying vessel G is composed of three inclined pipes, joined as in the figure: these are open at top and bottom, but fitted with plugs for the conveniency of filling and discharging the purifying liquor. This vessel is filled about two-thirds full of slacked lime and water brought to the consistency of thin cream, and the gas being forced through this by the pressure from the retort, it is deprived of the sulphur with which it was combined. The gas now passes through the small pipe connected with the upper end of the purifier, and enters the gasometer H from below. The gasometer is a vessel in which the gas is stored up for use. It consists of two parts, the tank and the gasholder: the tank or lower part is filled with water, and the gasholder, which is an inverted vessel, is a few inches less in diameter than the tank, to give freedom to its motions within the other. The gasholder is suspended by a rope or chain over the pulleys attached to the beam I, and balanced with a weight attached to the rope. The induction pipe, after leaving the purifier, descends, and, enter-

ing through the bottom of the tank, rises again in the inside of the gasholder, till its extremity is an inch or two above the surface of the water. The end of the pipe is here furnished with a cup, which constitutes a water valve, allowing the gas to enter, but preventing its return.* The induction-pipe is placed in a manner similar to the last, passing through the bottom of the tank, and rising again on the outside as at K, where it is furnished with a stop-cock, and from this point the branch pipes can be carried to the apartments that are to be lighted.

From the way in which this apparatus was erected, even an approximation cannot be made to the total expense, but, exclusive of the house and the gasometer, the actual outlay amounted only to £2 7*s.*† The gasholder being a cube of 3 feet, it contains 27 cubic feet of gas, which supplied three single jet burners. The retort was usually charged with eight pounds of coal, and eight pounds more were required for the furnace to work off this charge, which produced 27 cubic feet of gas, at the small cost of three halfpence. This quantity supplied the three burners for a period of six hours, hence the cost of one light for six hours is one halfpenny.

From the experience acquired with this simple apparatus, the writer has no hesitation in saying, that a country house, even of ordinary extent, may be conveniently and profitably lighted with coal gas; but he would recommend that the different parts should be substantially constructed, and on a larger scale than is here described.

Note.—The apparatus here described is exceedingly simple, and very well adapted for an establishment on a small scale, but it may be proper to remark, that, in extending it, some deviation would be advisable. In the first place, the crude gas should pass the tar-cistern before entering the condenser, and if, as should always be the case, the cistern is placed at a considerable distance from the retorts, a great part of the tar is deposited during its progress thither. Again, one of the best condensing apparatus is a train of pipes, set on end, and connected at top and bottom alternately, so as to form a continuous course for the gas, and arranged so that the tar will always run towards the tar-cistern. The purifyer may be constructed in a variety of ways, and these will vary also as the lime is employed in the wet or the dry state. The gasholder should be always made of sheet iron, and of a cylindrical form. The tank may be built of stone or of cast iron, wood being the most objectionable material, from its liability to decay in such situations. When gas is used regularly, and properly attended to, a single jet-burner consumes one cubic foot per hour, emitting a light equal to three or four tallow candles of six in the pound.

F.R.

* In the large gas works this valve is not used in the gasometer, but a more efficient method is adopted to prevent the return of the gas to the retort, by means of what is called the hydraulic main; this is a tubular vessel, placed horizontally, and kept half full of water, the pipes from all the retorts dip into this liquid, and through it the gas is forced by the pressure from the retort, but is effectually prevented from returning by the intervention of the water.

† Equal to $9.75.

The Value of Science.—The Rev. Mr. Bronson, in his report on the adoption of the manual labor system into the Allegany College, of Meadville, Pa. makes the following remarks:

"A distinguished citizen of Massachusetts who is also a practical agriculturist, says, that 'in that state there are about 400 townships. In each of these townships there are at least *one hundred* farmers who experience an average loss of *fifty dollars* each, per annum, in consequence of lacking that chemical knowledge necessary for the judicious mixture of manures, and adapting them to the different kinds of soils, in order to obtain the greatest product from the culture of different grasses, grains and vegetables. I have not a doubt,' he says, 'that the farmers in this state annually sustain a loss of $2,000,000 for the want of that knowledge of the practical uses and application of chemistry, geology, &c. which they might obtain in a manual labor institution, and which most of them could not afford to procure elsewhere.'

"Again, it is a well known fact, that the breed of horses, cattle, hogs, sheep, &c. in this county, are not of the most valuable kind; and as it would cost no more to raise animals of good quality than those of poor, the farmer by improving the character of his stocks might be the gainer annually of from *fifty* to *one hundred* dollars, and in some instances even to the value of several hundred dollars: but by *not* thus improving, they of course sustain a loss to the same amount.

"In addition to these items, we may enumerate the losses sustained from having a poor quality of fruits, grain, vegetables, &c. Good fruit requires no more cultivation, and occupies no more ground, than poor; and the same may be said of grains, grasses and vegetables. But the difference in the *value* of the crop of a good or bad quality is certainly very great. The apples which grew on less than one acre of ground, being of a superior quality, brought in the New-York market $300, while the same amount of fruit of ordinary quality would not have brought $100. If a farmer raises 1000 bushels of wheat of a quality which will demand in market *six cents* per bushel more than ordinary wheat, he will gain *sixty dollars* in the value of his crop. If the difference in price should be *twelve* cents per bushel, the value of the crop would vary *one hundred and twenty* dollars. And the loss or gain in all these cases depends on the ignorance or knowledge of the farmer, in reference to the best mode of cultivating the soil."

Marquis of Blandford's Apiary: *Description and Drawings of an improved Bee-Hive.*—[An increased attention to the rearing of bees has been of late years bestowed in this country and in Europe, particularly in Great Britain. The destruction of this useful insect by the miller had produced quite a general discouragement, but the experiments that have been given to the public through the periodical press have greatly revived hopes. The following is from an account of the Marquis of Blandford's Apiary, in the London Mechanics' Magazine:]

His lordship's park is most delightfully situated, about a mile from the romantic and retired village of Pangebourne, in Berkshire. The choice of the situation for the apiary is most excellent and delightful. It is at the top of a tower, forty-six feet high, situated in the midst of a wood, and commanding a most extensive view of the surrounding country, including a great part of Berkshire, Oxfordshire, Wiltshire, and Hampshire, the face of nature being clad in its endless variety of fertility, and old father Thames gently meandering through the valley formed by the distant hills which close the scene, but affording few prospective traces of those immense physical developements of his powers which render him truly the monarch of rivers. On the top of this tower his lordship possesses four colonies in collateral hives, and one inverted hive, all of which have been started since April. In the collateral hives the labors of the bees have been highly successful. From one colony his lordship has already separated a box containing 30 lbs. of honey, whilst another box, along with three small glasses, which cannot contain together less than 40 lbs., are quite ready for taking, and which will afford the sum of 70 lbs., and this without infringing upon the stock necessary for their winter subsistence. Upon my examination, the thermometer in the end boxes did not exceed 70°, whilst exposed to the atmosphere it was at 64°. A most remarkable contrast was afforded by the superior quality of the honey contained in the end box over that in the "pavilion of nature;" this superiority, particularly in the coloring matter, was most evident. Mr. Smith, the intelligent keeper, who quite follows in the steps of Mr. Nutt, informed me that the average quantity of honey produced from a cottage hive, upon the old system of management, did not exceed 30 lbs. to 40 lbs., whilst only in one case did he obtain, from a hive enlarged by eking, the amount of 50 lbs. It is extremely satisfactory and fortunate that, for the sake of reference, Mr. Nutt's system has fallen into such good hands, as both his lordship and the keeper appear to be as devoted to the system as they have been happy in the results.

I am not able to speak much regarding the progress of the inverted hives, of which his lordship has two—the one being at the top of the tower, and the other on the lawn at the back of the house—the former containing twenty-three glasses, and the latter thirty-three: this last is really a magnificent construction, an ornamental garden appendage such as few noblemen can boast. The bees had in each filled all the intermediate parts betwixt the hives and the glasses, and were just commencing their labors in the latter. Next summer his lordship will, I anticipate, reap an extensive harvest, both from these as well as his collateral hives, which are getting into prime and excellent condition for the winter.

[In the April number of the New-York Farmer, page 97, we have a drawing of Dr. Fletcher's hive. Our readers can compare that with the following, of William Todd's, in the Quarterly Journal of Agriculture. The plan of taking off and replacing apartments of the hive, with the view of avoiding the destruction of the bees, strikes us as a good one, but has an origin in this country prior, we believe, to Mr. Todd's experiments.]

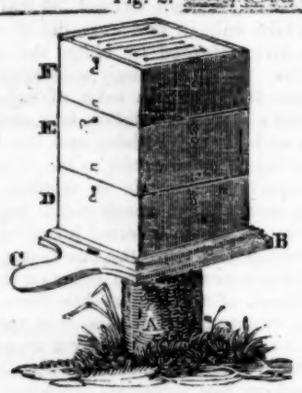
Mr. Todd, having, for some years past, made the management of bees a subject of study, has paid particular regard to the various kinds of hives, and the modes adopted for separating the bees from a part of their work, without injury to the remainder of the bees or their combs; and after trying various sorts of hives, has found none that he would compare with the one which is the subject of this paper. It is now four years since this hive was brought to its present improved state, and the experience of that

prolonged trial has served to convince him more and more that it is all that can be desired, for the two purposes of *dividing swarms* and the *abstraction of honey without killing the bees.* Mr. Todd believes that the plan is hitherto confined to himself and two or three others in his neighborhood, but is desirous that its advantages should be made known.

The annexed cuts, figs. 1 and 2, exhibit

Fig. 1.

Fig. 2.



this hive, the latter in a state denuded of the external covering, the former with the cover in its place, being the ordinary working state. The pedestal A is a pillar of wood or stone, of any convenient height, and fixed securely in the ground. On the top of the pillar is fixed a piece of stout board, having at each end a perforation or mortice. The stool or basement, B, on which the hive is set, is fastened to the former by means of two staples which pass through the mortices, and secured with two iron or wooden plugs. The stool is a board 14¾ inches square, with a landing place, C, in front, which is rounded off on the upper surface to prevent the lodgement of water. Round this board, at the distance of half an inch from its outer edge, is a frame of wood 1½ inches broad, and 1 inch in thickness. This is fixed upon the upper surface of the stool, having in the front side a door of entrance for the bees. This passage may be made 2 inches in width by ½ inch in height on the outside, but widening inward to 3 inches by ½ inch in height. The side of the frame opposite to the entrance is attached to a slip bottom of ½ inch in thickness, fitted to slide out like a drawer, thereby affording the means of cleaning out the bottom of the hive, and on which a supply of food can be placed when necessary. The inside measure of this frame should correspond to the inside dimensions of the boxes.

The body of the hive is made of deal, about one inch in thickness. Its dimensions are 10¾ inches square inside measure, and the total height about 19½ inches, but divided into three stories or compartments, D, E, F, each 6½ inches high, and separable from each other as occasion may require. Each box is furnished with a top and bottom perforated with oblong slits, as seen in the top of fig. 2; these are of hard-wood, ¼ inch thick, and each formed of two pieces. Each half of the tops and bottoms have three slits, each about ½ inch in width, and so arranged, that, when the bottom of one compartment or box is applied to the top of any other, the slits shall all coincide to allow free passage to the bees; the bottoms are secured with small buttons, to prevent their falling out in handling, but allowing them to be displaced with ease when the comb is to be abstracted. The boxes are united to each other with hooks and eyes, which must all be placed at equal distances from the edges of the box, to insure the application of any one box to any other of the set. One cover is adapted to fit all the boxes; it is required to be of thick wood, in order that the eyes of the hooks may be at the same distance from the edge as those of the boxes, its length and breadth being exactly the same as the body of the hive. The cover may be made of a single piece of board, or it may be improved by making it in two layers, with a vacant space between; a few small holes may then be perforated in the lower half, and one larger one in the upper portion, the latter to be stopped with a cork, and opened when occasion requires.

The above is all that is essential to this hive, but the whole may be secured by the cover, fig. 1, the outer dimensions of which correspond with those of the stool or basement, that is 14¾ inches square, and the height sufficient to admit the three boxes or compartments of the hive. A folding flap is provided on the back part of the cover, to allow the slip bottom to be withdrawn and replaced, while in the front, as seen in the figure, a small part is cut away to leave the entrance clear.

In the management of this hive, when a swarm takes place, if the swarm is large, take three boxes, but if small, two will suffice. Should three boxes have been applied, the lower one ought to be removed about the middle or end of September, as there should never be more than two boxes allowed for a hive during winter, nor till the bees have thrown the first swarm; when a first swarm is thrown, add a third box, to prevent after-casts. If it is wished that the hive should not swarm at all, let a third box be added about the 1st of June, when the hive begins to appear crowded, and afterwards a fourth box, if it appear necessary.

To divide swarms, watch the time when the hives become crowded, and when drones begin to appear in the bee garden. Place a stool or basement, with an empty box on it, on each side of the hive you mean to divide, and have at hand a spare cover. Unhook the hive, and draw through between the boxes a piece of thin wire or a thin table knife, to separate any portions of wax that may adhere. In the evening, when the bees are mostly home, move the boxes gently, and insert between them two large sheets of tin plate; lift the upper box with one of the tin sheets, and place it over the box already provided on one of the stools; close the entrance of this stool, and take out the tin plate; put the cover on the other portion of the hive, and remove it to the empty box on the other stool, and when all are properly secured, allow this division to remain open, that the stray bees may settle in it. Let it remain open during the following day, and at night shut it up, using precaution to admit the necessary air, and open the other division. Let the second be shut up, and the first open for twenty-four hours; and if the weather have been fine, you may set both at liberty; but if the weather have been unfavorable for bees going abroad, they must be kept apart a day longer. After this they will continue to work as separate swarms.

The person chiefly employed in shifting the boxes may be protected from the bees by a broad hat with a veil tied round the hat, and round the shoulders, made of calico, with a piece of gauze or cat-gut in front, and on the hands a pair of gloves, and over these a pair of woollen mittens, the clothes well buttoned up and secured.

Should the hive at killing time consist of three boxes, and the lower one be considered but partially filled, and should it, together with the middle one, be sufficient for the support of the hive, the upper box may then be taken away. To do this, disengage the upper box as before directed, and insert the sheets of tin plate; take away the upper box and lay it on a stool at 30 or 40 yards distance. Put the cover on the remaining boxes, and allow the bees free passage in both divisions. The bees in the removed box may be left alone for a little, and all that rise will fly back to the old stool, where, finding the hive as usual, they will remain. The bees in the separated box soon get tame when parted from the body of the hive, and may be blown out with bellows, or thrust out with a quill, and when once they take wing, they will go back to the old stool. Care should be taken at this season of the year to observe if the queen bee be in the separated box, that she may be preserved and put back safely to the hive.

When it is found necessary to feed bees, a trough of tinned iron, 10½ inches long, 4 inches wide, and 1 inch nearly in depth, with a floating lid of nearly the same dimensions, made of very thin fir wood, and bored like a sieve. This is filled with diluted honey, or thin syrup of sugar; and having put the floater upon it, draw out the slip behind, and put in the feeder, which must be so near the size of the opening as not to let a bee pass when it is in, and at the same time allow it to go in freely. The hive is then shut up to prevent other bees from having admission.

When weak swarms are fed in the ordinary way, without shutting them up, the bees of neighboring hives are attracted, who not only carry off the food given, but, after it is done, continue to rob the weak hive of all their store, if they have any. Feeding in this way often does harm rather than good.

In feeding, it is advisable to give the bees daily as much as the feeder will contain for a succession of days, if they continue to take it up, until they have got what may be considered proper or sufficient. During this time they are closely shut up, and after feeding is dropped, let them be kept in till they settle, and till the neighboring swarms, if they be in motion, settle also, when the passage may be left open. This prevents them from being the prey of neighboring swarms.

AMERICAN WINE: *Power of Knowledge.*—Mr. Sidney Weller, in a communication to the American Farmer, gives his testimony in favor of agricultural information derived from reading. He speaks frankly, not egotistically.

In making wine, this season, I used for mashing the grapes such rollers as are described by Mr. Herbemont, and that they have fully answered the purpose he named. And I will state too, that my grapes being fully ripe and some partly shrivelled, the must, when I came to taste its strength with an egg, was found sufficiently strong to make wine without the addition of either sugar or brandy. I have no doubt of its keeping if due care be taken; for some I made in the same way, more than three years since, is now good wine, or pronounced such by competent judges.

Nearly four years since I removed to my present residence,—and with very narrow resources, commenced improving my three hundred acres of nearly worn out land. Not to mention the cost and trouble of fencing and other repairs of a common kind on a farm in a state of dilapidation, I pursued a regular system of manuring, by hauling straw, pine and other leaves, into my yards and lots, and having my trash pens and other receptacles for making manure. Some, who thought my labors almost lost, seeing barren fields thereby made to produce good cotton and corn, now adopt the same plan, and consider it less trouble to make poor land productive by manure, than to clear new timbered tracts after the old syetem.

Some have now changed their opinion, who formerly considered me a visionary man, about to ruin my affairs, because I went to the expense and trouble of buying and sowing grass seeds, made cross fences, and took my cattle out of the woods to turn them into fields, and because I fed my calves milk and gruel in pasture lots, instead of letting them remain with their dams; and not to mention new instruments of husbandry, such as harrows, rollers, skimmers, &c. because I ploughed hilly ground horizontally, and planted corn in drills; seeing my grapes flourish, my cattle thrive, and that two or three of my cows afford more milk and butter than a dozen or two of theirs, and that my calves bid fair to become superior cattle, and that my grounds produce more, and washing is prevented by the horizontal and drill system.

But my attempts to rear a vineyard at first excited here the greatest incredulity. But few attempts of the kind have been made in this state, and if I have been informed correctly, none of consequence in the county of Halifax. And yet a county, I believe, as to soil and climate, as well calculated for success in rearing the vine as any in the Union. Some thought it impracticable, on my poor land, to make vines flourish at all; and again, if the vines could be reared, the business would be unprofitable, and if entered into any way largely, would ruin even a man of capital.

And indeed the expense of hiring, connected with this and other improvements, brought me into debt and some embarrassment. And I know not the consequence, had not Providence, who uniformly favors all laboring to avail of and make his own nature's works valuable to man, afforded me a substantial friend, in my neighbor, Gov. G. H. Burton, a gentleman of enlarged benevolence, extensive information and liberal views—for taking me by the hand, purchasing my rooted vines, and liberally rewarding me for superintending the rearing of a vineyard for him, he shared with me some of the illiberal remarks incurred by the new, and here untried, undertaking. But, incredulity is beginning to give place to faith, in view of the rapid growth and promising condition of our vineyards. And many that were incredulous, think now that rearing the vine will eventually be a profitable business; knowing that, independent of the expected profit of wine making, I have sold rooted vines these two years to some amount, and that (with a fair prospect of selling,) I will have a considerable number of Scuppernong and other choice kinds of rooted vines to be disposed of this fall, or next spring.

Here I remark, that at every step of my efforts to attain agricultural improvements, I have been more convinced, that emphatically, in agriculture, *knowledge* is, when judiciously applied, *power*; or, that the more correct and enlarged the *theory* or *science* in this business the more efficacious and eventually profitable the *practice*. And here I must acknowledge myself greatly indebted to the pages of the "American Farmer": from which *pioneer* of agricultural periodicals, I have been constantly receiving important hints and directions. I heartily accord with Mr. Smith, (late editor of the "Farmer,") in his valedictory, that the agriculturist, as well in these as in other important pursuits of life, should read much on the subject of his business. But to persuade most agriculturists to accord practically with this sentiment is a difficult task. Some, indeed, I know, look upon the agricultural periodicals of the day as a sort of newly arisen *catch pennies* to gull them out of money.

PROFITS OF FARMING.—It is often the case that men in mercantile, manufacturing, and mechanical pursuits, are reputed to be worth much more property than they really possess. We fully believe that extensive statistical information on the relative wealth of merchants and farmers would show results favorable to the latter. The following is from the Poughkeepsie Journal.

MR. EDITOR,—The business of farming is often considered less profitable than other business; and the reason is, that the income of the farm is not truly estimated. If the entire revenue of a well regulated farm were estimated, we should find the per cent. on the property not less than that of any property, that is equally safe.

My neighbor B. came to me the other day, quite discouraged on account of the small profits of farming compared with other business. Now, as I knew my neighbor to be a good farmer, and a pretty correct calculator, I attempted to convince him, from his own statements, that he is enjoying a very fair per cent. from his farm. He has a small well-improved farm, which, two years ago, was bought for $7,500; since which he has built a house that cost $1000, which, with his entire stock, &c. makes his property worth $10,000. From this my neighbor complained, that he realizes only a few hundred dollars, not more than — per cent.

But there are many things not counted which ought to be reckoned as part of his income. His house, as I said, though not necessary to the business of farming, besides the one he already had, yet agreeing well with the circumstances of his family, may be considered as yielding at least $60. Besides the team, waggons, &c. necessary for his farm, he keeps a good pair of horses and pleasure-waggon, because, you know, his wife and daughters must ride in a style that is agreeable to their circumstances and standing in society. The value of these, counting it equal to the expense, is not less than $140 per annum. And of wood, my neighbor tells me he burns more than 30 cords, which at $3 per cord is $90. Then, his garden, orchard, and fruit yard, for all these are managed in the best manner, yield him the value of $80, including his cider, &c. In addition to these we might mention the veal, the poultry, and the eggs, and the fine piece of mutton that he has now and then; for, as the Irish lord says, "he lives on his own estate and kills his own mutton." All these, though not generally estimated, are a part of the income of his farm. So here is more than $370, in addition to the four hundred which he acknowledges to have received in cash as the clear income of his farm. It is true that this is for the comforts, &c. of my neighbor's family, but such as they require, and such as, in any other business, would cost the cash. My neighbor was satisfied. And I am persuaded, Mr. Editor, that a careful examination of *facts* would lead to conclusions very favorable to agriculture. And your readers would welcome a statement of these conclusions in your paper.

ARITHMOS.

PLOUGHING WITH THREE OXEN.—The following, from the Genesee Farmer, appears worthy the notice of those farmers who work oxen. Mr. Lacy, the writer, is spoken of as a good and thorough-going farmer.

Believing it to be the duty of every member of community to lend his aid, however feeble, in maturing and suggesting new and useful improvements, (by which means all arts and sciences have by degrees attained their present state of perfection,) induces me to communicate at this time the successful result of an experiment in the use of three oxen abreast in ploughing, which team may be drove by the man holding the plough, and the draft being apportioned to each ox equally, by means of a whipple-tree, they are not subject to unequal pulling as two yoke, from unskilful and violent driving, and lose no power by pulling from the tops of the neck, or of one yoke being removed too far from the plough, which increases the burden of the hind yoke, without any benefit to the business.

I put one pair of oxen in a common yoke, and the third ox in a single yoke made quite crooked. To the end of the double yoke I attach by a staple a chain of three or four links and a hook. To the end of the single yoke, also, a chain of about twenty inches in length is attached, of the size of a common trace chain, which is quite sufficient to unite the team.

The singe ox draws in traces hitched from the underside of the yoke to a short whipple-tree, attached to the long end of a three ox whipple-tree, which may be shorter than is used for horses.

I have a plough constructed purposely for this team by Kellum & Bingham, of Wheatland, in such a manner as to answer for two or three oxen. For three oxen the pitch should be taken entirely out by means of a key to raise the beam tenon in the plough handle, the mortice being wider than the tenon, and to set the plough on or off the land, the mortice in the beam through which the sheath passes should admit of a wedge an inch thick by the side of the sheath, by means of which the plough may be set to or from the land; in consequence of the wide mortice, an iron key through the sheath will be required.

Whoever may be induced to use a three ox team will find after a short trial that they work pleasantly, and perform the amount of labor full equal to two yoke in the common way with a skilful driver. ALLEN T. LACY.

Chili, Oct. 10, 1833.

SAXONY SHEEP.—By the following we perceive our correspondent, "a Native of Saxony," has made a sale to the Hon. Henry Clay. We take this opportunity to request Mr. G. to remember us during these long evenings.

Mr. Grove, an extensive wool grower in the town of Hoosick, has a flock of fine Saxony sheep, of superior blood and quality. Henry Clay, becoming familiar with their merit, made application to Mr. G. for a few to improve his stock. *Fifteen* have consequently been sent. They were shipped at this city for Baltimore last week.—[Troy Press.]

LARGE TURNIP, *The Cap Sheaf!*—The curious may see and examine for themselves, at Mr. Hatch's bar, in this town, an English turnip which grew in the garden of Mr. Isaac Gibson, of Rindge, weighing *eighteen pounds*, and measuring 3 feet 8 inches in circumference.—[Keene Sentinel.]

PRICE OF HOPS.—Hops vary much in price. Some years farmers and speculators are made "hopping" mad because they can get no price for them. This year, as appears below from the American Farmer, they are "hopping" for gladness.

The late increased demand for hops in New-York, and the high prices which the article commanded in consequence of the exportation of a large quantity to Europe, appears to have set our friends in the north "all hopping." Every northern agricultural paper that we open abounds in "hops, hops." It would seem from the following article, that one, at least, of these active gentry has hopped into a pretty round sum.

"*Hop Culture.*—The Bangor Courier mentions that one of the packets of that place, bound to New-York, recently took on board two hundred bales of No. 1 hops, raised in Penobscot. The value of this quantity was $8000, and the present prices of the article make the crop worth, on an average, $150 per acre. As the Maine soil and climate are suited to the culture, we see no reason why it should not be carried, in that as well as other sections, much farther than it has been. In Great Britain, about fifty thousand acres are occupied with hops."

Now this kind of business, at the rate of "$150 per acre," we would like very well to be at, if we only knew how. Has any of our subscribers ever cultivated the hop to any extent in this section of country, or farther south? and if so, cannot he or they tell us something about it? We should like to be "made sensible" of the practicability, prospects of success, and advantages of this culture, with the method of conducting it.

CURING BUTTER.—We should suppose the following recipe recommends too great a proportion of saltpetre:

Take two parts of the best common salt, one part sugar, and one part of saltpetre, beat them up together, and blend the whole completely; take one ounce of this composition for every sixteen ounces of butter, work it well into a mass, and close it up for use.

The above by some is used in this proportion—ten ounces of salt to four ounces of clean sugar.

The following is the commendation given of this mode of practice in the Pennsylvania Farmer:

"The butter cured by this mixture appears of a marrow consistence and fine color, and never acquires hardness, nor tastes salt; it eats as sweet after being kept three years as at first. It must be noted that butter thus cured requires to stand three weeks or a month before it is fit to be used; if it be sooner opened, the salts are not perfectly blended with it, and sometimes the coolness of the nitre will be perceived, which totally disappears afterwards."

This mixture will not cost more than about one cent per ounce, which is sufficient for curing one pound of butter. Country farmers, is not this worthy of your attention? As much so as sweet butter is better and bears a higher price than that which is strong and frowy. Besides, it affords to the dairy woman a settled rule, in an operation which, in the way it is usually practised, is done without rule or uniformity. I cannot but think, were people to adopt the mode here recommended, they would soon be convinced of the importance of it. Every one knows the superiority of meat preserved by a proportion of saltpetre and sugar with common salt, and it cannot but be expected that the same should be the case in respect to butter.

SALT YOUR CORN.—Mr. Brown, of this vicinity, communicated some information to us, in a conversation recently held with him, in regard to the use of salt in corn which is put away in the husks, which may be interesting to the public. He stated that he received last year a quantity of corn, which he had purchased, in so wet a state that he was apprehensive that it would spoil. He remembered that it was a common practice in Pennsylvania, when hay was put away somewhat damp, or not fully cured, to sprinkle salt on it, and that such hay generally kept well, and that horses and cattle were very fond of it; he therefore concluded to try the experiment on his corn. He accordingly, as his corn was thrown in a pile on a large floor, sprinkled it with salt, using from a half a bushel to a bushel of salt to five or six hundred bushels of corn. The corn kept well, never became musty, and never had any weevil in it. Mr. B. still had of this corn when he communicated this information to us; and he stated that the bread which it then made was so sweet and good that it was esteemed preferable to that made of new corn. He also stated that he was not under the necessity of purchasing any fodder for his working oxen last winter, they fed upon the husks of this corn so freely; and he added that they kept in excellent order. Mr. B. was so well pleased with this experiment, that he is putting up all his corn this year in the same manner, using about half a bushel of salt to five hundred bushels of corn, which he thinks is enough.—[Ala. Intel.]

PITTING TURNIPS.—As the turnip harvest is approaching, we take the liberty of suggesting to those who cultivate the Swedes, our method for pitting them for winter. The pits are limited to two feet in width, and of an indefinite length, and are dug in a dry situation, seldom more than two feet deep. When the pit or hole is filled with roots as high as the surface of the ground, the turnips are laid by hand, the tops out, and sloping to the centre, until they terminate in a ridge, which is generally about two feet above the ground. The whole are then covered with straw, and then with earth. The important point follows: The crown of the ridge is then pierced with an iron bar, at intervals of a yard, and the earth pressed out, so as to leave an entire aperture into the turnips, and into each of these apertures a wisp of twisted straw is loosely inserted. The roots will heat, and unless the rarified air is permitted to escape, the turnips are apt to rot. The openings permit its escape, without danger of the frost doing injury. With this precaution we have not lost one bushel in a thousand. The same course would no doubt be beneficial in preserving the *mangel wurtzel*. B.

PRICE OF FARMS.—It is very evident that landed property is advanced in price by the general prosperity of the country, and from speculation. We caution farmers, however, not to come under the influence of the land mania. A few weeks ago Mrs. Parmentier's garden, of 23 acres, was purchased for $57,000. It has since been sold in building lots, at, we understand, a reduction of 25 per cent. Perhaps the following are similar purchases:

We last week mentioned the sale of the Thompson farm at 80 dollars the acre. We understand the purchaser has already been offered and refused *twenty-five hundred dollars* for his bargain.

A farm, one mile from Norristown, Penn., of 145 acres, was sold on the 17th ult. for $152 per acre. The purchaser has since refused $5000 for his bargain. Norristown is a small village, situated on the Schuylkill river, 17 miles from Philadelphia.—[Poughkeepsie Journal.]

Several acres of woodland at Valley Grove, three miles from Brooklyn, adjoining the turnpike, were lately sold by G. L. Martense, at five hundred dollars per acre. Two acres, owned by Mr. M. Clarkson, in the same neighborhood, three and a half miles from the ferry, sold for one thousand dollars per acre.—[Brooklyn Star.]

COCOONS TO THE POUND.—At page 339 it is stated that 1000 balls of good cocoons will make one pound of twisted silk. In a recent conversation with Mr. Brooks, he states that his estimate was too small, a pound requiring from 1500 to 2000. The last number, however, was the basis of our calculation. The price, too, was stated to be three dollars per bushel. Those of very good quality will command four dollars.

The Influence of the Origin of Seeds on the Quantity and Quality of Crops. By Dr. BRONN, Professor of Rural and Sylvan Economy in the University of Liege. [Translated for the Farmers' Register, from the Journal d'Agriculture, etc. des Pays Bas.]

Even to the present day the cultivators of forest trees have not thought of taking advantage of a phenomenon which is presented to us in the cultivation of agricultural plants, and which, although it has never yet been sufficiently explained, is nevertheless well established. This phenomenon is the influence which seed exerts on the quantity and quality of the crop which is produced from it, according to the different nature of the soil and climate from which this seed has been procured. The good results of this influence have appeared after using seed from a cold climate and a tenacious and cold soil, in a warm climate and a dry and light soil; but they are also equally apparent under circumstances quite the reverse, provided the soil be not too dry and barren, and the seed has had the opportunity of being developed and coming to perfect maturity. It appears then that the two opposite kinds of soils and climates profit equally from a change of seed. Let us consider and examine at first a few observations which may serve to explain this phenomenon, and thence endeavor to deduce the physiological law, and apply it to the cultivation of trees.

The advantages resulting from a change of seed are generally recognized in the cultivation of the cereal plants. In some mountainous countries, in Scotland, for example, they bring the seed from the low country and from the plains, where the climate is more mild, and consequently the seed more forward, a quality which it always preserves for several generations. We are convinced that the cultivator of this mountainous district, if he always used from his own crops, would reap later and later harvests, so that at last, perhaps, they would not come to perfect maturity; a circumstance easily explained by the short duration of the summers in the mountains. If, on the other hand, the cultivator of a flat country, the climate of which is mild, and the soil dry and light, continually made use of his own seed, it would head every year sooner, the stalks would become shorter, and the heads and grains smaller and smaller, and in time there would result but a poor produce. In this last case the cultivator brings his seed with advantage from a country more cold, the soil of which is good and substantial. Probably these are the circumstances on which rests entirely the difference between the cereal plants of summer and those of winter, a difference too variable to be easily determined.

The flax, without doubt, presents us with the most striking example of this phenomenon. We, with great advantage to our crops, bring our seed from Riga, i. e. from a colder climate—the sowing of which causes the grain to be slowly formed, and thus leaves more time for the developement of the stalk, which is the principal object of its cultivation. To judge by analogy, we would be led to believe that the result would be the same, were we to obtain from a colder country and a colder soil the grain of the clover and other plants used for forage, in the cultivation of which our object is large stalks and a well developed foliage. Even at the present day we are without experience on this head.

Generally, all plants which are principally cultivated for their grain or fruit, need little or no manure; while manure is necessary for those plants from which we wish to obtain large stalks and leaves.*

Fruit trees, which shoot vigorously, generally bear little or no fruit; and every circumstance, which on the other hand prevents the too great growth of wood, favors the formation of fruit. On this observation rests the cultivation of dwarf fruit trees, and espaliers; also that of the vine, &c. &c.

Field plants, and plants of the kitchen garden (under equal circumstances in other respects,) blossom sooner in dry, warm, and clear summers, and their stalks, as well as leaves, are smaller than in rainy and cloudy summers.

From these and many other analogous observations, we can deduce a physiological law of the greatest importance in the cultivation of plants, to wit: Every thing which favors the disproportionate growth of vegetables, opposes or retards their propagation or formation of fruit; and *vice versa*, the formation of fruit is hastened and forwarded at all times when exterior circumstances prevent the full developement and disproportioned growth of the stalk.

Now, to apply this law to the rearing of trees, I ought first to remark that many of the phenomena which I have mentioned are equally apparent in the vegetation of forest trees, although they have not been so much noticed. In fact, we see the greater part of our forest trees bear seeds sooner, more often, and in greater quantities, with a south exposure, and in a dry and light soil, than with a northern exposure and on a cold and stiff soil; while under the latter circumstances they acquire greater dimensions.

Many trees, the birch for example, vary with regard to the time of budding and formation of seed, some being forward and others late. It is well ascertained that those which bud late have the hardest, heaviest, and in every respect the best timber; and increase more in volume within a certain time, than the more forward kind. It is not yet proved that the same phenomena may take place relative to age, i. e. that there may be varieties which blossom and bear seeds, and the growth of which consequently diminishes at different ages. This appears very probable, since we frequently see larches, firs, birches, &c. trees which had their origin in a cold and elevated country, bear seeds in a low, dry, and warm country, after having scarcely reached the age of ten or fifteen years, and ten or fifteen feet in height; and the growth of which afterwards becomes sensibly slower.

From this observation we may conclude that the trees of cold climates produced from seeds gathered in dry and level countries will degenerate after many years to dwarf trees, shrubs, bushes, &c. which will scarcely ever be of any value as forest trees. Every attentive cultivator of forest trees will have already noticed similar examples, which will justify this conclusion.

From all that precedes I deduce for the rearing of timber trees this general law: It is necessary to procure, as far as possible, the seeds from a colder climate and a colder and stiffer soil than the climate and soil of the country on which you wish to rear these trees.

One of the best things for cultivation in the sandy lands of the provinces of Limburg, of Anvers, and of Northern Brabant, is undoubtedly the sylvan pine, [*pin sylvestre.*] According to the rule just above, the seed gathered in this dry and barren country should not be used, but ought rather be brought from a colder country, or from some place, the soil of which is colder and stiffer. Since some time back, in France and elsewhere, the preference is generally given to the seeds of the pine from Riga, Norway, Scotland, Haguenan, &c. and the rule which it is my wish to establish has thus been followed by us, but without our having been able to justify this preference by reasonable motives. We have been content to regard the pines of this country as a particular species of variety.

The fir *epicea* (a northern fir), and larch, are suitable to be reared in the mountainous lands of Ardennes. If we use the seed which grows in the dry and sandy parts of Limburg, Anvers, and Northern Brabant, we would raise nothing but dwarf trees, which at the age of twenty or thirty years, perhaps, would be covered with mosses, and the growth of which would after that become more slow, and would soon afterwards decay. It is our interest, then, to bring these seeds from still colder climates and better soils, and from countries in which these two trees grow larger, viz. from the Alps, Switzerland, the Tyrol, the Mountains of Hartz, the Black Forest, and Norway.

The rule which I wish to establish will perhaps become very useful in introducing into this country foreign forest trees, for it is very probable that the little success with which we have met in this important part of the cultivation of forest trees is occasioned principally by choosing unsuitable countries from which to bring the seed.

[The foregoing communication will deserve the attention of all thinking farmers. If Professor Bronn's opinion is correct, we may make it operate beneficially on the practice of every farm, either for the correction of common errors, or the introduction of positive improvements, or for both. Very many cases of the proper application of this theory will readily occur, of which I will mention a few only as examples.

We frequently change our seed wheat, either from choice or necessity, and obtain new supplies from other, and perhaps very different soils—and we decide on the comparative productiveness of any two kinds, most generally, by their growth, as they stand in the field. Yet, according to the foregoing theory, the greater length and bulk of straw may be expected from seed that will yield a deficient crop of grain. By attention to the rule offered we may make profitable selections of seeds from every single field, by taking from the warm and light soil, if we want the best product of grain, or the cold and backward, if the crop is of a kind to be most profitable in proportion to its whole bulk.

Another necessary deduction is, that the farmers of Lower Virginia ought often to procure new seeds of clover and other grasses from the mountains or the northern states, to renew the original bulk and value of those crops, and to prevent their becoming more productive in seed than in hay. And the reverse operation will be equally beneficial as to wheat and other grains, of which the mountain and northern farmers ought frequently to obtain a new stock of seed from the plains and from the south. But even if such considerable changes are not attempted, a less degree of benefit may be obtained by attending to these rules within the limits of almost every farm.

A striking proof of the truth of Professor Bronn's opinion of the influence of climate on seeds is presented in the different times in maturing of the timothy grass of America and the cattail grass of England. These grasses are in appearance, and in every respect, precisely the same, except that the English grass is about two weeks later in maturing than the American, when both have been sown together on the same soil. Mr. Strickland made the trial, and states the result in his observations on the agriculture of the United States, reported to the British Board of Agriculture. This difference, which was so fixed, and appeared so remarkable to the observers, is completely explained by Professor Bronn's theory applied to the temperate and moist summers of England, and the more heated air and drier soils of the United States.—Ed. Farm. Reg.]

Cheese made of Potatoes: (Extract from the Correspondence of M. Fahnenberg—translated for the Farmers' Register, from the "Journal d'Agriculture, etc. des Pays Bas.")—In Thuringia and a part of Saxony, they make cheeses of potatoes, which are thought very good. This is the way in which they are made. After having chosen potatoes of good quality, (large white ones in preference,) boil them in a kettle. When they are sufficiently cooked, take them out, and let them cool; then peel them and mash them in a mortar. To five pounds of potatoes well mashed add one pound of sour milk and the quantity of salt necessary; knead the whole, cover it, and let it remain undisturbed for three or four days, according to the season; at the end of this time, knead it again, and place the cheeses in small baskets where the superfluous moisture will evaporate.

Then place the cheeses in the shade to dry, and put them in layers in large pots or any other vessels, where they must be kept for fifteen days. The older these cheeses are the better their quality.

Three sorts of cheeses may be made; the first, which is the most common, is made with the proportions mentioned above; the second, with four parts of potatoes and two parts of curdled milk; the third, with two pounds of potatoes and four pounds of cows or ewes milk.

Cheeses made of potatoes have over common cheeses the advantages of not engendering mites, and of keeping fresh for many years, provided you put them in a dry place and in close vessels.

I have repeated this experiment with the proportions of the second quality, and this is the course that has been pursued. We first cooked the potatoes, then peeled and mashed them with the hands. (We might, if we proceeded on a large scale, make use of the cylinders generally used in distilleries for mashing potatoes.) We then warmed the milk, into which vinegar (in place of rennet) was poured until it curdled. After this operation, we mixed the milk with the potatoes, put salt into the mixture, and passed it through a sieve of hair to make the mixture more perfect. It was then put into an earthen pan, where it remained for ten or twelve days. At the end of that time we placed it on sieves, where it was drained at the same time that it was moulded. The sieves must be covered with cloth. After draining fifteen days, the cheeses were pressed and covered over and placed in wicker work in a cellar. By this time the fermentation was developed, the cheeses still soft, and a skin of mould was formed on the surface. The flavor of cheese was very perceptible; it is not disagreeable, and I believe these sorts of cheeses may be made with advantage on farms. Now that the taste of cheese is well developed, I shall dry them in the shade, as was recommended in the recipe above mentioned, in order to know the quality of the product in this state. I have now shown the reader the consequences of this experiment, which seems to me to be very interesting to rural economy.

Waste of Corn in Agriculture.—It is estimated that only one-third of the seed-corn sown on the best land grows; the other two-thirds are destroyed. The number of cultivated acres in Great Britain and Ireland amounts to 47,000,000; 30,000,000 of which are under the plough. Two-fifths of the latter, or 12,000,000 acres, are annually under the cereal crops. The average allowance of seed for the three kinds of corn may be stated at four bushels and two-thirds per acre. The quantity of seed annually sown thus amounts to 7,000,000 quarterly. If two-thirds of this quantity are rendered unproductive by some agency which has hitherto been uncontrolled, then 4,666,666 quarters of corn are annually wasted! The quantity thus lamentably wasted would support more than 1,000,000 of human beings. —[Quarterly Journal of Agriculture.]

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* The author's meaning must be taken with reference to the usual rotations of his country, according to which, crops raised for their seeds are preceded or followed by grass crops, or others in which the bulk of the whole plant is of far more importance than the quantity or the perfection of the seeds—and according to his theory, crops of the latter kind would receive so much more benefit from manure than the former, that economy requires the farmer's limited stock of manure should be given to the one kind, and not to the other.—[Ed. Farm. Reg.]

OFFICERS OF THE ONONDAGA AGRICULTURAL SOCIETY.—At the Anniversary, Oct. 9, 1833, the following officers were chosen:

President—Sylvanus Tousley.

First Vice-President—Joseph Savage. Second do.—Albert Neely. Third do.—E. F. Wallace.

Secretary—V. W. Smith.

Treasurer—Oliver R. Strong.

Auditor—James R. Lawrence.

Committee on Agriculture—John Sprague, Timothy Barber, David Munro.

Committee on Horticulture—James Beardslee, Daniel Kellog, Curtis Moses.

Committee on Domestic Manufactures and Household Arts—Azariah Smith, Nathan Munro, Otis Bigelow.

Committee on Stock—John Sanford, Floyd Howell, Charles Jackson.

ALBANY CATTLE FAIR.—It affords us much pleasure in being enabled to lay before our readers the following results of this experiment. From the commencement of our exertions to promote the organization of agricultural societies, we laid it down as a fundamental principle, that the *sale* of live stock, implements, and the general products of the farm, should be the leading object. In proportion as facilities for this are afforded, the associations will be permanent, and the various other beneficial objects easily obtained.

The Fair took place on the 30th and 31st October, agreeably to notice. The domestic animals were exhibited in forty pens, arranged on two sides of Washington Square, and in other parts of that spacious area. The domestic fabrics, manufactures, &c. in the City Hall.

The late season of the year at which, from unforeseen circumstances, the Fair was appointed to be held—the novelty of the experiment—the inclemency of the weather—and the short and partial notice which had been given—all conspired to prevent the display which would have been expected under more favorable circumstances. But the experiment has succeeded beyond public expectation, and its result will fully justify the belief that the Fair will be permanently established; that it will annually increase in interest and in usefulness; and that it is destined to become a great mart for cattle, and the finer productions of the farm.

The animals exhibited were rather select than numerous—calculated for the breeder rather than the butcher. Nearly 150 choice improved Short Horn and Devonshire cattle were displayed upon the grounds; about the same number of select sheep, of the Saxony, New-Leicester or Bakewell, South-Down and Cotswold breeds; and several excellent horses, mares and colts. The swine were of the improved Berkshire, Byfield, Grass and China breeds, and their crosses, and evinced the great improvement of which our country is susceptible in this valuable species of farm stock. The managers do not hesitate to give it as their deliberate opinion, that a finer show of select domestic animals, of improved breeds, has never been made in the United States, than was exhibited on this occasion. The prices obtained were such, it is believed, as will not only remunerate the breeder, but induce him to redouble his exertions to make further improvements in this important branch of our husbandry. Cows sold at from $30 to $50; a lot of Short Horned two year old and yearling heifers at $80 to $100 each; Oxen, $110 to $120 the pair; Ewes from $7 to $15; Bucks from $30 to $40; a lot of Wedders at $13 each, &c.

The Managers tender their thanks to the public-spirited gentlemen who disinterestedly contributed to the show of fine animals on the occasion.

The articles exhibited at the City Hall were deserving of high commendation. The samples of Enamelled and other Hollow Ware—of Carpenters' Tools, Shovels, Spades, &c.—of Saddlers' Wares—of Oil Cloth, &c.—were uncommonly excellent, and reflected credit alike upon our arts and our artizans. For neatness, and a high finish, we have seen them no where surpassed. The samples of Silk were much admired, and readily commanded the price asked by the owner. A large lot of Butter, formed into beautiful prints, sold quick at 25 cents per pound. Some hundreds of trees of the White Mulberry, 8 to 10 feet high, were among the articles sold. It is not amiss to remark that these were raised from seed distributed by the State Agricultural Society in 1832; and that the parcels distributed to the several counties at that time, must, upon ordinary calculation, have produced to the state at least 300,000 mulberry trees: no inconsiderable beginning to the production of silk, which may yet become a staple commodity of our state. The Implements and Machines were of approved patterns, and many of them new, and manifest improvements.

In attempting to give a list of the animals and other articles exhibited at the Fair, many omissions, particularly as to description, must necessarily occur, from the want of more matured arrangements—an evil which it is hoped experience will, in future, in a great measure prevent.

To insure a timely and general notice, the Managers now apprise the public, that the next Albany Cattle Fair will be held on the *first Wednesday and Thursday of October*, 1834.

By order of the Managers,
JOHN TOWNSEND, Chairman.
STEPHEN VAN RENSSELAER, jr. Sec'y.

The following is a list of animals exhibited at the Fair:

By Charles Henry Hall, of New-York—24 Short Horned cattle, and 12 New-Leicester sheep.

By C. N. Bement, of Albany—7 Short Horned cattle, a filly, and 4 swine of the Chinese and Grass breeds.

By F. Hawes, of Guilderland—33 South-Down sheep, and 3 Berkshire pigs—all imported.

By John Wilkinson, of Duanesburgh—Durham cows, heifers and oxen, and a flock of Bakewell sheep.

By Matthew Bullock, of Bethlehem—8 cows and heifers of his improved Short Horn stock.

By Thomas Dunn, of Albany—40 Bakewell and Cotswold sheep.

By Benjamin Knower, of Albany—20 Saxon bucks.

By R. Goadsbury, of Bethlehem—a superior bull.

By John Townsend—Cows, oxen and a bull.

By Stephen Van Rensselaer, jr. of Watervliet—18 of his superior Short Horned animals.

By Jonas White, of Columbia—8 Devonshire heifers, and a bull of the much admired Devon breed.

By Hiram Drum, of Rensselaer—a pair of fat oxen.

By Elijah Cheeseborough, of Guilderland—a number of neat cattle.

By John Moran—a bull, oxen and horses.

By Andrew M'Hinch—a filly and two colts.

By John J. Viele, of Rensselaer—a Short Horn bull.

By G. Van Schoonhoven, of Saratoga—a breeding mare and two colts.

By A. Roseboom, of Otsego—a Holderness bull.

By Blackman and Cornell—fat oxen.

By Mr. Kirby, of Guilderland—sundry neat cattle and swine.

By A. Thorp—several neat cattle and Bakewell sheep.

By George Robinson—3 calves of the improved English breeds.

By R. C. H. Moore, of Rensselaerville—oxen and wedders.

By S. Allen, of New-York—a Durham Short Horned bull.

By Mr. Cary—a Devon bull calf.

By J. Findley, of Rensselaer—a Short Horn heifer.

By E. Corning—a heifer, oxen and sheep.

By H. M'Culloch—an imported Durham bull, and 25 other fine animals.

By A. Crosby—a pair of horses.

By John Fagan—a milch cow and calf.

By Jackson & Bliss—several fine cattle.

By Isaac Denniston—cows of the Durham breed.

By John Gaskin, of Guilderland—a superior stud horse.

By Wasson & Jewell—a full bred stud horse.

By Mr. Veeder—a fine four year old Bussorah stud.

Of the articles exhibited at the City Hall, the following general and partial enumeration can now only be made:

By Webster, Beck & Cumberland—25 specimens of enamelled iron ware, manufactured in Albany.

By John Wilkinson—samples of farm products.

By J. Buel—improved farm implements, and agricultural products.

By Knoweson & Smass—Glass shades made at their glass-works, at Sandlake, Rensselaer county.

By Nathan Rose—a number of beautiful coverlets, of domestic fabric.

By William Peller—an elegant domestic manufactured hearth rug.

By Steele & Warren—a card of carpenter's tools, very superior, and a rotary cooking stove—a recent invention.

By I. and H. Stanley—19 articles of beautiful hollow ware.

By Gen. S. Van Rensselaer, jr.—a great variety of excellent and rare garden products, including the artichoke, several species of grapes, figs, raspberries, carolina potatoes, &c. &c.

By James Walsh—20 beautiful door mats, manufactured from Manilla hemp.

By Eddy and Ames—shovels, spades, bars, &c. from their manufactory, and axes of Simmon's make—all superior articles.

By L. I. Dansing—a variety of choice productions of the garden.

By O. Goodrich—a quantity of beautiful printed butter.

By D. C. Norton—large productions of the garden, among them a crook-neck squash, weighing 35 lbs.

By I. Ballard—some hundred white mulberry trees.

By R. Fisher—fifty pippins, weighing 52½ lbs.

By D. Powers & Co.—specimens of oil cloth from the Lansingburgh factory—an excellent fabric.

By Alexander Walsh—a plant of the celebrated Shiraz (Persian) tobacco, perennial flax, carolina potatoes, pea-nuts, and other rare vegetables raised in his garden, of fruits, new sorts; and a specimen stock, leaf and fibrous substance of the *agave sisalana*, of Mexico. This is one of the numerous fibrous plants which Dr. H. Perrine is practically laboring to introduce into Florida, as affording a valuable substitute for hemp and flax.

By Henry Spawn—a bell pear, weighing 1 lb. 15 oz.

By David Griffin—a hair wig.

By James Lawliss—several fine specimens of his wares, as saddles, harness, trunks, &c.

SARATOGA COUNTY AGRICULTURAL SHOW AND FAIR.—We disagree altogether with the editor of Goodsell's Genesee Farmer, in considering this fair and show a "failure," or the want of a favorable disposition of the most enlightened part of the farming community towards agricultural societies. In fact, the following account from the Ballston Spa Gazette shows, most conclusively, that the farmers in the county are more ready to patronize an annual exhibition and sale than the officers of the

society anticipated. The officers of the association should make as ample provisions as possible, and, above all, make it certain that the exhibition will take place, however few the contributors. Unless this is done, it is unreasonable to expect farmers will be at the expense of preparations.

In pursuance of the notice of the Board of Managers of the Saratoga Agricultural Society, published in their circular, and signed by the President, the first annual exhibition and fair of the society was celebrated in the village of Ballston Spa, on Wednesday, Nov. 9th.

The morning being fine, several ploughmen, with horse teams, from some of the remote towns in the county, were early on the ground, prepared to exhibit their skill and enter the list of competitors for the premiums offered by the Board of Managers.

About the middle of the day, no officers of the society appearing, and the ploughmen finding that they could not literally comply with the stipulations of the circular of the Board of Managers, not knowing where to find the constitution, or any person authorised to receive the entrance fee, proceeded to appoint a committee *pro tempore* to superintend and regulate the ploughing match, in conformity to the published stipulation of the Board of Managers, and to award the premiums accordingly.

The committee consisted of Edmund Hewett, jr. Pascal P. Wheeler, and Moses McKinley. Lebbeous Booth, Esq. politely furnished a suitable plat of ground for ploughing, and the ploughing, we think, was all executed in a style which does credit to the ingenuity and enterprize of our farmers in this most important item of agriculture. The field being in the immediate vicinity of our flourishing and public spirited village, the ploughmen were honored and encouraged in the performance of their task, by the presence of four or five of the inhabitants.

The committee attended to the duty assigned them, and awarded the premiums as follows:

To John Maxwell, first premium, -	$10
" John Shaden, 2d do. - -	7
" Joseph Newlands, 3d do. - -	5

After the premiums were awarded, the members of the society *pro. tem.* partook of a good dinner, provided by Mr. Jennings, and cheerfully departed for their several homes, not doubting, considering the acknowledged importance of agricultural pursuits to national prosperity, as well as social felicity, and the commendable zeal manifested by the officers of the Saratoga County Society at its first annual exhibition and fair, that we shall receive, as we certainly merit, and need, legislative aid. The hope was also cordially expressed, that other sections of the county might be favored and benefitted by similar patriotic exhibitions, to promote the interest of the farmer and to further the perfection of the great science of agriculture, on which all other sciences and pursuits so much depend.

N. B.—But for the circumstance that a report some how obtained currency, the day previous to the fair, "that the Board of Managers had concluded not to have an exhibition the present season, but thought it not worth their trouble to give public notice to it," there would have been a much greater collection of people from a distance. From one town we know the rumor prevented the attendance of many persons, and that it met and arrested on the way to the fair about forty animals that had been selected and started on the way for exhibition and sale.

Brighton Cattle Show, &c.—The Committee on Inventions, consisting of E. Hersy Derby and Daniel Treadwell, Esqrs., report as follows:

That Messrs. Newell & Willis offered from their valuable agricultural establishment a great variety of articles, a part of them for premium, and a part for exhibition only. For premium, one of Scot Keith & Co.'s cast iron pumps, for which a premium of $5 is awarded. One of Willis' improved straw cutters, for the improvement of which one of $5 is awarded. A self operating cheese press, from the Shaker Village, at Canterbury, New Hampshire, one of $10 is awarded. Also, Flagg's portable horse power threshing machine and grater cider mill united. This machine was accompanied with several certificates recommending it highly; the committee were much pleased with its operation, but as some parts of it were a little out of order, and there not being ample time to test it in every particular, it was concluded not to award a premium at present. In every instance where a premium was awarded, satisfactory certificates were produced stating the superiority of the article offered.

Among their articles offered for exhibition only, were several of Howard's improved cast iron ploughs, two cultivators, a very superior portable garden engine, a hand screw cutter, and several chains for tying up cattle, all of which did credit to their establishment.

Adam Brooks, of Scituate, offered for premium a silk spinner and twister, with several certificates, recommending it very highly; a variety of samples of its work were exhibited, the operation of winding off the silk from the cocoons, and the spinning, doubling and twisting of the sewing silk was performed in the presence of the committee. This machine operates well, and in the infant state of the silk manufacture in this country, the committee recommend the encouragement of it, by a premium of $20.

To Carver Washburn, of Bridgewater, for his improved cast iron wheel hubs with composition boxes, together with their axletrees, which were highly finished, and accompanied with very satisfactory certificates, a premium of $5.

To Nathaniel S. Bennett, of Framingham, for wrought iron bows, for tying up cattle, certified as an improvement, a premium of $2.

Messrs. Prouty & Mears, plough dealers, No. 12 Commercial street, Boston, offered from their store a variety of articles for exhibition only. Among which were a great number of ploughs, several cast iron wheel hubs, patent bored pipe boxes, an improved cast iron lock tug pin, and a pair of cast iron and wrought iron improved rolling galling irons for the sides of waggons. The superiority of the cast iron wheel hubs over the wooden ones was particularly pointed out in the statement furnished by them. The whole of these articles do them great credit.

P. Washburn & Co. of Middleboro', offered for exhibition a large lot of shovels, of different patterns, made at their manufactory under the direction of Mr. George Ames. All of them were highly finished and excellent tools.

J. C. Hewin offered 4 pitchforks of a superior quality.

Cassander Gilman and Elias Hall, of Raynham, and Joseph Silvester, each of them offered a cast iron plough, all three of which were well finished implements.

Several small articles were offered, but as they could not be said to appertain particularly to agriculture, it was thought inexpedient to mention them.

E. Hersy Derby,
Daniel Treadwell.

Brighton, 16th Oct. 1833.

Franklin Cattle Show.—From the Greenfield (Massachusetts) Mercury we copy the subjoined brief account of this exhibition. It contains interesting information.

The cattle show of Wednesday, the first ever held in this county, was one of the pleasantest festivals we ever witnessed. The continued storm of the preceding three days undoubtedly had a great effect to diminish the splendor and extent of the show; but with all these disadvantages the exhibition was a very fair one, and calculated to excite strong interest. It was estimated that nearly five thousand people attended.

The address delivered by Rev. Henry Coleman gave universal satisfaction, so far as we have heard. It was a plain and practical exposition of the wants and duties of the farmer, in the course of which a view was taken of the comparative merits of the different modes of cultivation practised in the county. We had intended to give a sketch of it, but as it is understood that it will shortly be printed in conformity with the request of the society, we will not run the risk of marring its effect by clothing it in our own language.

The following appropriate Hymn, written for the occasion by Dr. James Deane, of this place, was sung during the performance:

HYMN.

O Thou, whose goodness fills all space,
Hear us in heaven, thy dwelling place,
While now with gratitude we raise
Our humble song of feeble praise.

Thou mak'st the changing year roll round
In seasons with abundance crown'd;
The smiling Spring, the Summer's glow,
Give life and warmth to all below.

To Thee, from whom all mercies spring,
Creation's fairest works we bring;
We dedicate them in thy name
To Mercy's source from whence they came.

We bring the harvest of the soil
That crowns the year and pays our toil,
The fruits that Autumn's bounteous hand
Hath scattered o'er our happy land.

We bring the works that Art and Mind
Impart, to aid and bless mankind;
What genius, skill and art bestow
To Nature's Architect we owe.

Great God, still open wide the door
That swells our treasures and our store;
And at the final harvest day
To thy fair garners speed our way.

After the address the list of premiums was read, together with the reports of the committees so far as they had been made out. It is understood that copies of these reports will be furnished so soon as they can be prepared for publication.

After the performances were over, the Society, their invited guests, and others, sat down to a handsome dinner provided by Mr. Smead, to which some fine specimens of fruit that had previously been exhibited, formed no inconsiderable acquisition. In the evening there was a well attended ball at Mr. Smead's, whose festivity was kept up to a late hour, and fortified by a supper highly creditable to the establishment, both in matter and manner. So closed a day which we trust caused every one who partook its pleasure to wish that it might often be repeated.

Of the different articles of which the show was made up, we shall speak but briefly, as the forth-coming reports are very minute in their description. Mr. Hastings, of Colraine, exhibited two fire frames, price $10 and $12, which attracted universal admiration for the beauty and finish of the castings; they were nearly as perfect and free from flaw or roughness as if the material had been bronze. They were declared by gentlemen, whose experience had been very extensive, to be the finest castings they ever saw.

The cast-steel chisels of Messrs. Russell & Dickinson attracted a great deal of attention. They were among the first specimens of a manufacture which has recently been established in this village, from which very considerable results may reasonably be expected. The demand for the edge tools made in this manufactory has hitherto exceeded the supply, at prices more than double of what is commanded by the best imported tools, and we are informed by those who have used them that their intrinsic excellence corresponds to their beauty of finish.

The fact is, there is no imported articles which will compare with them. The English chisels are inferior in fineness even to the axes which are now made in this country.

The cutlery of Birmingham and Sheffield will not stand a competition with Yankee skill and ingenuity. The works of Messrs. Russell & Dickinson are at present carried on by water

power; but the owners are about to introduce a steam engine of twelve-horse power, built at Brattleboro', to be heated by the same furnace which is used for tempering the steel. It is said by the way that the fuel for the Brattleboro' three-horse engines cost but nine pence per day! This is rather too much to believe, even where soft wood costs but $2 per cord. If the saving can be made by the use of steam in this region where water power is so abundant and cheap, it will make an era in our manufactures; for how much more important will the application be on the sea-board, where every little mill-race is carved into twenty privileges, at the rate of about a gill of water and an inch of fall to each.

The specimens of Wilson's patent andiron exhibition by Root, Wilson & Co. of this place, were particularly interesting as exhibitions of an improvement in construction which will probably in no long time supercede all other modes of construction. This improvement may be likened to Columbus' discovery about the egg; no one ever thought of it till it was discovered, and now the only wonder is that it was never thought of before. It consists merely in this: The front piece and bar, or part which supports the fuel, of the common andiron are fastened firmly together, so as to make them very inconvenient for carriage, and with the additional consequence that when the one is broken, the whole pair is useless. In Mr. Wilson's andiron the front and bar are cast separate; so that when the bar is burnt through or broken, it is only necessary to take it out and insert another, at a cost four fifths less than that of a new pair.

There was a quantity of apples, one side of which were sweet and the other sour, each having been made so by inoculating the bud from which it came with another of a different species, presented by Mr. Gardner Jones, of Shelburne.

Wooden ware from Messrs. Boyden & Draper.

Cast-steel hoes from Colerain, were all entitled to commendation.

The milk from the cow belonging to Mr. Wait, whose butter obtained a premium, gave 207 pounds of butter in four months, being somewhat over 12 pounds a week.

MONROE AGRICULTURAL FAIR.—Although the Exhibition was not as stated in the report, all that could have been wished, yet it is very evident that nothing is wanting but perseverance and increasing zeal.

The Agricultural Exhibition of the Monroe County Agricultural Society was held at Rochester, on the 23d instant.

Although it was not all that could have been wished, yet the show of neat stock was such as to convince those present, that much attention had already been paid to the breeding of choice animals, and some handsome animals of the Dutch, Devon, and Durham breeds were exhibited.

Mr. H. Hooker, of Brighton, had some fine animals, which he denominated the Dutch breed; his animals were universally admired, and as will be seen by the list of premiums, the Judges considered them of superior quality.

Messrs. Garbutt & Reed presented some fine cattle of the Devon breed, which were pronounced very fine.

Messrs. Reynolds & Whitney brought forward some beautiful animals of the short horned breed, which did credit to their choice of blood, from which to increase their stock.

Mr. Legget & Son produced some fine animals of the Devon and Holderness breeds.

Mr Lee presented a cow of a mixture of the Holderness with some other breed, which was a superior animal, and received the first premium.

Mr. Jenkins, of Canandaigua, Ontario Co. and Mr. Ely, of Onondaga County, honored the Exhibition with specimens of their stock, some of which were much admired.

There were many others that had superior cattle which are not mentioned.

There were some fine specimens of Domestic Manufactures exhibited, among which were some fine Carpets from the Manufacturing Establishment of Messrs. Newell & Stebbins, of Rochester, whose works are doing honor to this section of the State.

A superb grass Bonnet was exhibited by Miss Schenck, and some bead Bags by Miss Ramsdell, of Perrinton.

LIST OF PREMIUMS.

Stallions—First Premium, G. M'Cracken, $7; second do. William Reed, $5; third do. Jno. Strickland, $3.

Mares—First Premium, William Legget, $5; second do. Levi Lacy, $3; third do. William Reed, $2.

Bulls—First Premium, H. Hooker, $7; second do. Asa Whitney, $5; third do. A. Reynolds, $3.

Oxen—First Premium, Wm. Garbutt, $6; second do. Stephen Legget, $4; third do. Titus Goodman, $2.

Steers, 3 years old—First Premium, E. Little, $3; second do. W. Legget, $2. Steers, 2 years old—first do. S. Legget, $3. Steers, 1 year old—first do. H. Hooker, $3; second do. W. Whitney, $2.

Cows—First Premium, E. S. Lee, $5; second do. W. Garbutt, $3; third do. J. G. Crandall, $2.

Heifers, 3 years old—First Premium, H. Hooker, $3; second do. W. Garbutt, $2. Heifers, 2 years old; first do. Wm. Reed, $3; second do. H. Hooker, $2. Heifers, 1 year old—first do. W. Merry, $3; second do. W. Garbutt, $2.

Hogs, Boars—First Premium, W. Garbutt, $3; second do. Samuel Wood, $2. Sows—first do. L. M. Moore, $3.

Wheat—First Premium, Jirah Blackmore, 68 bushels 43 pounds per acre, $4.

Corn—Levi Lacy, $2.

Mangel Wurtzel—First Premium, W. Whitney, 52 tons 720 pounds per acre, $3.

Grass Tuscan Bonnet, by Miss Ann Schenck, $3.

Two Bead Bags, by Miss Ramsdell, $2.

The following officers were elected for the ensuing year:

Wm. Garbutt, President.
John G. Crandall, Wm. Legget, Isaac Moore, G. Ramsdell, } Vice-Presidents.
N. Goodsell, Secretary.
L. Tucker, Recording Secretary.
J. Child, Treasurer.
J. Gould, Auditor.

TOWN COMMITTEES.

Brighton—H. Hooker, G. Cobb, A. Eaton.

Chili—Wm. N. Reid, Thomas Streeter, Wm. Wooden.

Clarkson—Abel Baldwin, John Bowman, Gustavus Clark.

Gates—Abelard Reynolds, Warham Whitney, Ezra M. Parsons.

Greene—G. H. Holden, A. Rowe, John Lake.

Henrietta—Stephen Legget, Martin Roberts, Andrew Snyder.

Mendon—Milton Sheldon, Charles Foot, James Smith.

Ogden—Wm. Buel, Wm. B. Brown, Col. Colby.

Penfield—Wm. Wood, Lebeus Ross, Samuel Miller.

Perrinton—Enoch Strong, J. C. Eaton, Ambrose Burr.

Pittsford—J. K. Gurnsey, N. Nye, J. Armstrong.

Riga—Samuel Baldwin, Oliver Ide, Erastus Sprague.

Rush—Simeon M. Coe, John P. Steel, Alfred Jones.

Sweden—Joseph Randall, Abel Root, Samuel Sheldon.

Wheatland—Jirah Blackmore, Levi Lacy, Samuel Wood.

WM. GARBUTT, Pres't
N. GOODSELL, Secretary.

HAMILTON COUNTY, OHIO, AGRICULTURAL SOCIETY.—The following report on manufactured specimens occupies all the space we can devote to the exhibitions at the recent fair of this society.

To the Secretary of the Hamilton County Agricultural Society:

SIR,—The manufactured articles exhibited at the late fair of the society were as follows:

1. By Duncan Cameron—one pound of sewing silk, and one pair of silk stockings. The judges considered the former superior to much imported, the latter a well-finished article, and awarded to Mr. Cameron a premium of five dollars.

2d. By Benjamin Swallow——two dozen brooms, principally floor and carpet, which the judges considered superior to any thing of the kind ever exhibited. He readily obtained for them $1 each. Among the lot was six clothes brush brooms of equal finish, which met a ready sale.

3d. By P. O'Rielly—a quantity of ale and porter, considered a superior article, to whom the judges awarded the premium.

4th. By George A. Colton—two hats of superior quality and excellent finish. The judges, there having been no competition, respectfully recommended that the premium be awarded to Mr. Colton. They were sold at auction at $9 each.

5th. By Esther S. Hays—three pounds of thread and raw silk, exhibited after the report on D. Cameron's, which the judges considered superior to any thing exhibited, both for texture and color, and awarded to her a premium of five dollars. This silk was sold at auction at 6¼ cents per skein.

6th. By Miss Paulina Gregory—a piece of lace. The judges report it equal to any of foreign manufacture, in fabric, quality, and pattern, and awarded to her a certificate.

Very respectfully, yours, &c.

R. C. WOODWARD,
Secretary of Manufactured Articles.

Cincinnati, Oct. 15, 1833.

UNION AGRICULTURAL SOCIETY.—The following is from a Danville, Ky. paper:

The fair of the Union Agricultural Society, on last Thursday, in this place, was a splendid exhibition. It surpassed the expectations of all, and was pronounced by judges of fine stock, and those who had attended similar exhibitions, to be not unworthy of the spirited stock raisers who came forward on the occasion. As to *form* there was not an indifferent animal shown. The prizes were all contended for handsomely. No one bore off a *premium* without honorable competition.

After the exhibition of the stock the domestic manufactures were exhibited at Mrs. Davenport's Inn. Here, those who were spectators were no less delighted than they had been in the field. The articles shown were all fine specimens of female industry and skill.

BUTLER COUNTY AGRICULTURAL FAIR.—From the Hamilton Intelligencer we extract the introductory remarks to the lengthy list of premiums. Among these premiums are those for ten stud horses.

The annual fair of the Butler County Agricultural Society commenced in this place yesterday, Oct. 11. The exhibition went off well, and we give it as the opinion of many who have attended our previous fairs, that the stock exhibited yesterday was decidedly superior to that formerly produced on similar occasions. No individual who witnessed the proceedings of yesterday can longer doubt that immense advantages result from associations formed for the promotion of agriculture, and the general interest of our farmers. The large number of attendants, and the peaceable manner in which the exhibition has thus far been conducted, afford sufficient evidence that the yeomanry of Butler county have already become satisfied

that innumerable advantages may be derived from a well conducted Agricultural Society.

FLORIDA ORANGES.—We learn that Florida Oranges are in unusual demand in the northern markets. So great has been the desire to obtain them, that already one half the crop on the St. Johns has been taken away. The crop at St. Augustine probably amounts to 2,000,000, and are ripening very fast, and will be fit for market soon.

The superiority of the Florida Oranges over those of foreign growth is fully admitted, and it only needs a little more attention and enterprize to supercede the use of the former altogether.—[Florida Herald.]

REMARKS.—Florida Oranges retail in the streets of New-York at 25 cents per dozen. They are not considered quite as sweet as those from tropical climes, but have a fresh appearance and pleasant flavor.—[ED. N. Y. F.]

INDUSTRY.—Men must have occupation or be miserable. Toil is the price of sleep and appetite, of health and enjoyment. The very necessity which overcomes our natural sloth is a blessing. The world does not contain a briar or a thorn that divine mercy could have spared. We are happier with the sterility which we can overcome by industry, than we could have been with spontaneous plenty and unbounded profusion.

The body and the mind are improved by the toil that fatigues them; that toil is a thousand times rewarded by the pleasure which it bestows. Its enjoyments are peculiar, no wealth can purchase them, no honor can win them, no indolence can taste them. They flow only from the exertions which they repay.

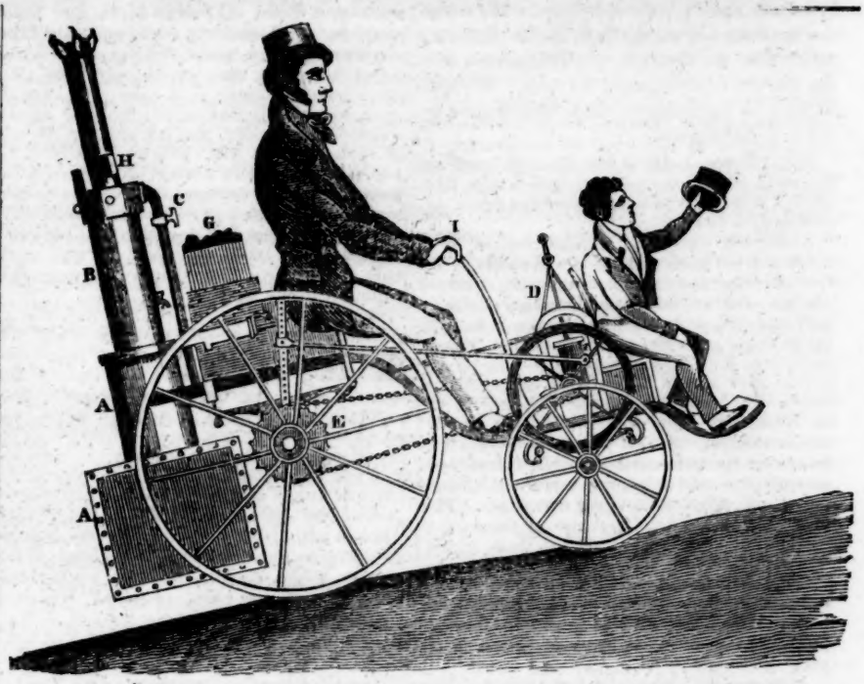
ORCHARD GRASS.—The graziers of the valley pronounce it more nutricious than either Timothy, Clover, or Herds Grass, and it is by uniting this grass with the two first that the proverbially fine pastures and meadows of the central counties of Pennsylvania are found. It resists the heat of our summers, and recovers from the effects of the hoof and the tooth very rapidly. For seed lots two bushels should be sowed to the acre; and for the scythe, or for pasture, the mixture should be one bushel of orchard grass and one gallon of timothy seed, over which a gallon of clover should be scattered in March.—[Kanawha Banner.]

AN EXPERIMENT ON OATS.—Having sown the same oats for several years, without changing the seed, my crops became fuller and fuller every year of the *black dust head*, or *blast*, until the loss from this cause amounted to one half of the crop; and when thrashed out, the black dust was so suffocating, that the laborers were made sick by it. I determined in the spring of 1832, to change the seed, and got 100 bushels of the purest seed that could be procured in Richmond; they did not quite hold out to sow all the land intended, and I had to use some of my own impure seed—which I washed effectually in very strong lime water, and allowed them to remain in the lime water one night before sowing. It proved an effectual remedy: the product was decidedly more clean on harvesting, than that from the seed procured in Richmond, although that was tolerably pure.—[Farmers' Register.]

[*From the Mechanics' Magazine.*]

TRAVELLING BY STEAM ON COMMON ROADS.—Although the state of the roads in this country will not at present allow us to be very sanguine of the advantages to be derived from carriages propelled by steam, we are satisfied that our readers will be gratified to possess a record of what is doing in other countries, and we hope it will rouse them to fresh exertions in promoting internal improvements here. The annexed account of the "Triumph" steam carriage, from a recent number of the London Mechanics' Magazine, will be read with interest, as also the observations it has elicited from two most valuable correspondents to that journal. One of them, Mr. J. O. N. Rutter, has been for several years looked up to as an authority on most subjects connected with engineering. He claims to be the inventor of a method of substituting water for fuel in steam engines, alluded to at page 117, Vol. II. of this Magazine, and has stated that it has succeeded equal to his most sanguine expectations at the gas works in Lymington, of which he is the superintendant.

If our information is correct, we shall have it in our power to prove that the credit of the invention is due to an American citizen; and a patent was taken out for it in 1817, by Mr. James Morey, of New-Hampshire. Why it has not been acted upon we are at present uninformed, but we hope in our next to be able to give a full description of it, accompanied with such drawings as may be requisite.—[ED. MECH. MAG.]



The Triumph Steam Carriage. By SAXULA.

[From the London Mechanics' Magazine.]

SIR,—I did not intend to send you the prefixed rough drawing of my little Triumph steam carriage until I could faithfully inform you of its full powers, in regard to speed and weight propelled; but, from considerations of expense and ill health, delay succeeds to delay until I fear some claims of priority, which I pretend to, may be denied to me. It is the little carriage, (built in 1828, and first mentioned in your Journal of 29th May, 1830,) improved in construction, but the same in principle, and which was the first that ever ascended a rise of one in six; the chief alteration is the application of two main levers, to obviate the necessity of having very large wheels.

It is built on what I at present consider the best principles of my theory, namely, placing nearly the whole weight, when in motion and needful, on the propelling wheels, giving a varying leverage to the power, to any required extent, and making the line of direction of the power, when acting on the propelling wheels, to be such that its action and re-action shall as near as possible be parallel with the line of progress, by causing the fore carriage to have a tendency by its weight to propel the hinder part.

The main axle, wheels, and springs of this carriage, are so attached to the carriage frame that they can be shifted backward or forward to vary the centre of gravity of the whole at pleasure, and also keep the endless chain stretched.

A A is the tubular boiler; B, tubular chimney and steam chest; C, steam pipe, cased deep in flannel, &c.; D, a pair of cylinders, pistons, &c. working an endless chain wheel on the crank shaft and two small fly-wheels; E, another endless chain wheel, either fast or loose on the main axle; F, a pin on each fly-wheel, working alternately two main levers, that catch in two clutch wheels fixed on the main axle; G, coke box and water cistern; H, feed door in the chimney; I, pilot pole.

As soon as the engines start, the pins F on the fly-wheels begin, by means of the connecting rods, to pull at the main levers, which levers, by a re-action (if they are in gear), have a tendency to lift the fore carriage off the ground. (I have seen it thus lifted quite off.) By this operation the weight of the fore carriage is partly thrown on the hind wheels, increasing their interlocking force with the ground, and at the same time tends to pull them round by its gravity. *Note*, I do not mean to say that power is thereby gained, as all power comes from the steam, but that the power is acting in its best direction, being a transfer of the power of the steam to the gravity of the fore carriage, as the steam, with a varying leverage, cannot well act direct on the main axle. When the road is level and good, the main levers are in a few seconds put out of gear, and the unvarying endless chain, E, put in.

APPLES FOR CATTLE AND HOGS.—We consider the facts and suggestions in the following article from the Brattleborough Messenger worthy the special attention of farmers. We hope to hear of experiments made this winter by some of our readers.

MR. EDITOR,—Allow me through your columns to lay before your readers a few facts on this subject, which may perhaps prove advantageous to farmers.

About ten years ago, in that part of New-York where I then resided, it was found by actual experiment to be a fact, that hogs, turned into an orchard, with only the slops of the family, would gain two pounds per day. In 1828, while living with Mr. C., of Buckland, Mass. I persuaded him, though with much difficulty, to let me give apples to his hogs during his absence. He was gone nearly a fortnight, and on returning, came into the garden where I was, and says, "S——, what in the world have you been doing to my hogs while I have been gone?" I was startled, and answered "I don't know, sir; why, what is the matter?" "Matter! why, I could not get one of them out of his stye this forenoon." I was really afraid I had somehow killed his best hog, and exclaimed "Why, what *is* the matter?" "I should think you had been stretching their skins a little, for I never saw hogs fatted so fast in my life." "I have given them apples a plenty," was the reply.

A man in Brattleborough last week, on showing me a hog that weighed nearly 15 score, said, "Here is a hog I am fattening entirely on sweet apples, boiled:—father thinks they are better for hogs than potatoes."

A man in Guilford, conversing on the same subject, said to me, "There is a hog that will weigh over two hundred. I brought it home in July on my back. I have given it nothing but apples and a little slops for drink. I had no thoughts of his thriving so well; and my pigs do nicely on nothing but sweet apples."

To this list of facts I might add scores of similar ones; but a word to the wise is sufficient. Sweet apples are better than sour ones, but an occasional meal of the latter, for store or fatting hogs, I verily believe will be found to make them grow or fatten faster than so much corn. Hogs partly fattened become cloyed, dainty, and somewhat restive, and apples are just the thing to relax and open their intestines, and give them appetite and variety. And there is, withal, a deal of nourishment even in sour apples. A meal every day, or every other day, will help to put on the flesh faster than perhaps any other thing. Let any reader who doubts just try it for himself, and he will be surprized at the effect. A trial can certainly do them no harm. Store hogs that have a plenty of apples, sweet or sour, or both, will thrive remarkably well.

Apples are also good for cattle, and even for cows. On this point allow me to state what I have seen, and therefore *know* to be true. I proposed to this same Mr. C., of B., to give apples to his cows. "No, by no means," said he, "nothing will dry them up so fast." This he confirmed by numerous instances of cows getting into orchards and becoming dry. But after a while he consented to let me *try* it. I did try it perhaps ten times, giving them apples for a few days, weighing their milk, and then doing the same without giving them apples. They gave from a quarter to one half more milk when they had apples than when they had none. The experiment satisfied Mr. C. and he bade me put up near two hundred bushels of sour apples for his cows and hogs. He gave a few occasionally to his horse. I think it was January before we gave out the last.

Ripe apples are peculiarly good for the human constitution, especially when taken in the fore part of the day. And why not equally good for beasts! I know that an opinion generally prevails, that sour apples will dry up milch cows quicker than almost any thing else; and so they will when taken in too large quantities at a time. Let cows break into an orchard and fill themselves with apples until they can scarcely move, and it will dry up their milk—but not more than green corn will. Too many potatoes eaten at a time will have the same effect. But this argues nothing against a moderate quantity, and no more in the case of apples than in that of corn or potatoes. Let any man begin with a small quantity, say less than a peck, and increase the quantity as they become accustomed to them, and a hundred to one if he does not find the growth of both store and fattening cattle and hogs, as well as the milk of his cows, to be thereby increased from a quarter to one half.

But it is objected that cattle are liable to get "choked" by them. So they are when they break into an orchard and you run to get them out. They will go to one tree and fill their mouths, and before they have masticated these sufficiently to be able to swallow them, they again fill their mouths, greedy to secure as many as possible. But let them go quietly to a pile and take their own time for eating, and there is little if any danger of their choking.

Now, if these things are facts, let me in conclusion ask, if it is not evidently the design of God that we give our superabundance of fruit to our stock, rather than we should distil it into a poison, the effect of which is most destructive to the mind and the body of man!

A HAS BEEN FARMER.

OBSERVATIONS ON TRANSPLANTING TREES.—As success in transplanting trees depends much on the treatment they receive in that operation, we have thought it advisable to present a few remarks for the observation of those who have had but little experience on the subject. On removing trees from the nursery, care should be taken to prevent the roots from dying previously to planting them, otherwise they may receive considerable injury, and in executing our orders for trees, particular care is taken to preserve them from drying winds before packing. Immediately on their receipt the bundles should be unpacked, the roots well watered and "laid in," until the ground in which they are to be planted be ready to receive them. By laying in is to be understood the making of a trench sufficiently large to admit the roots, into which they are placed: the earth having been previously made fine, is then filled in around them, and a gentle watering given, in which situation they may remain with safety until planted. The holes in which it is intended to plant them, should, for an ordinary sized nursery tree, be from 2½ to 3 feet in diameter, and about the same in depth; the earth from the bottom should be thrown aside; and its place filled up with good compost or black mould, (no fresh stable manure should be used in the compost.) The tree should be planted one or two inches deeper than it stood in the nursery; the roots and fibres being spread out horizontally, and during the process of filling in the earth, the tree should be shaken several times, so as to admit the soil between the roots and also fill up any cavities that might otherwise remain. The earth should then be trodden down and gently watered; in a short time it will have settled, and any hollows that may have formed should be filled up—finishing by forming a basin around the trunk to receive the rain or watering which it may be necessary to give it, if the ensuing season should prove dry; to prevent the winds from loosening the earth around the roots, they should be secured to a stake by bands of straw.

The proper season for transplanting trees in this latitude is from the middle of October until the first or middle of May, during which time they may be safely transported; when they are destined for the south, the autumn and winter months, perhaps, are preferable, but when for this latitude, or northerly, spring and autumn are equally good—evergreens are thought to succeed better when transplanted in the spring; much however depends upon the nature of the soil; if heavy, we would in general prefer the spring. Bulbous and other flowering roots, such as hyacinths, tulips, ranunculus, anemone, crocus, &c. &c. are taken out of the earth in June, from which time to November or December they can be transported without risk.

Green-house plants can be transported by water, and for short distances by land, at almost any season, though the autumn, winter, and spring months are preferable, as they may then be closely packed, and require no attention on the passage.

THE FIRST WHEAT IN NEW ZEALAND.—The difficulty of introducing the greatest improvements among people who need them most, is prettily illustrated by Williams' account (in the vegetable world), of the manner in which wheat was first cultivated in New-Zealand by a native chief who had visited the English settlements in New-Holland. On leaving Port Jackson the second time, to return home, he took with him a quantity of it, and much surprized his acquaintances by informing them that this was the very substance of which the Europeans made biscuit, such as they had seen and eaten on board of their ships. He gave a portion of it to several persons, all of whom put it into the ground, and it grew well; but before it was well ripe, many of them were impatient for the produce; and, as they expected to find the grain at the roots of the stems, similar to their potatoes, they examined them, and finding no wheat under the ground, all except one pulled it up and burned it.

The chiefs ridiculed Duaterra about the wheat, and all he urged would not convince them that wheat would make bread. His own crops and that of his uncle, who had allowed the grain to remain, came in time to perfection, and were reaped and threshed; and, though the natives were much astonished to find that the grain was produced at the top, and not at the bottom of the stem, yet still they could not be persuaded that bread could be made of it.

A friend afterwards sent Duaterra a steel mill to grind his wheat, which he received with no little joy. He soon set to work before his countrymen, ground some wheat, and they danced and shouted with delight when they saw the meal. He afterwards made a cake, and baked it in a frying-pan, and gave it to the people to eat, which fully satisfied them of the assertions. From this time there was of course no difficulty in making the culture a fashionable one.—[Poulson's Daily Advertiser.]

VALUABLE JACK.—We recently copied from a western paper, an account of a sale of 160 mules by Gen. Shelby, of Kentucky, for $11,840 cash. The country west of the Alleganies is doubtless very favorable for the breeding of these animals, the real value of which for farm labor seems to be little understood in Maryland. We have had for several years near Baltimore, a Jack, which for size, vigor, and all other requisites for a first rate breeder, is unrivalled by any other animal of the kind in America, so far as we have been informed. His height is but one quarter of an inch less than 15 hands, and he is every way well proportioned. Yet this splendid animal has been suffered to pass season after season almost without use by our farmers. But this waste of valuable capabilities is now at an end—the animal has been seen by one who knows his value, and how to profit by it. He has just been purchased from Lloyd N. Rogers, Esq. by the Hon. Henry Clay, and taken to Kentucky. We understand that he was sold for $1000, which was certainly not high, considering his great superiority over any Jack ever seen in the country.—[Am. Farmer.]

TO PREPARE COLD POTATOES.—Some of your readers may start, and ask "Who don't know how to warm cold potatoes?" Why a great many don't know how to do it as it should be done. In travelling I have rarely met with potatoes prepared in the following manner, and I never found any that were half as good.

Tastes differ I admit, but the experiment is easily made.

Slice them into a frying-pan, and over a quart of potatoes, pour half a tea-cup full of good cream, (but no water,) first sprinkling on a little salt; cover it closely, and after it begins to boil, stir them a few times till the pan is nearly dry, but not burnt, then dish them.—[Genesee Farmer.]

Cotton Crop of Mississippi.—A writer there estimates the export at 200,000 bales. "These at $40 per bale, would amount to $8,000,000. The entire agricultural interests of this state, yearly, are about ten millions."

Henry Clay.—On Thursday last the Hon. Mr. Clay visited the Ten Hills Farm of Col. Jacques, in the neighborhood of Boston. Mr. Clay appeared very well pleased with Col. Jacques' stock of different and excellent breeds, and pleased every body present by his affability and pertinent remarks on the excellencies and peculiarities of the different animals which Col. Jacques submitted to his inspection. It was evident that Mr. Clay was a *connoisseur* as well as an amateur of agriculture—as much at home in the field of the farmer as at the cabinet of the statesman; and left a very favorable impression on the minds of a number of our most distinguished cultivators, and other pillars of the farming interest, who met and accompanied him on the excursion.

Afterwards Mr. Clay visited the agricultural warehouse, seed store, and office of the N. E. Farmer, and gave the sanction of his approbation to the tools, machines, and specimens of agricultural and horticultural improvement which are exhibited in that establishment.—[N. E. Farmer.]

Curious Facts and Experiments.—The "Philosophical Transactions" contain a very curious paper on hybernation, from the pen of Dr. Marshall Hall. From the fact that the peculiar condition of certain mammalia in the winter season, in other words, the state of hybernation of these animals, bears so striking an analogy to ordinary sleep, as to justify the expectation of some interesting results being deduced from considering the two in connection, the learned doctor has paid very minute attention to the state of the hedgehog, dormouse, and bat, during sleep, and he has come to a conclusion respecting it which does not appear to be consistent with the testimony of former observers. He states that the animal, in ordinary sleep, experiences a striking diminution of the power of respiration: that the acts of breathing become less; and that its temperature decreases many degrees below the average of what it is in the active state of the animal. Its capability of enduring the abstraction of the atmospheric air is increased to a corresponding extent. Such is the character of the natural sleep of hybernating animals, and it is distinguished from hybernation only in the degree in which the symptoms of the ordinary sleep are developed. In this case, that is, in true hybernation, the function of respiration is nearly altogether suspended; at least the phenomena which result from experiments on animals during hybernation are all confirmatory of such a conclusion. The doctor has shown, likewise, that the air which surrounded the animal whilst in the hybernating state yielded, at most, but very slight signs of any absorption being experienced by it. He placed a bat in a contrivance so constructed as to be capable of indicating the minutest amount of the absorption of gas. In the interval of 60 hours after a most carefully conducted experiment he found that three-quarters of a cubic inch of gas had been absorbed. The amount of the diminution in the quantity of gas required by the hybernating animal may be estimated by stating that the average consumption necessary to him in the active state would be an equal quantity of gas in about half the above number of minutes. In the process for determining the absorption of hybernating animals, the nicest precautions are demanded. Whilst the air to be respired is secured against any addition, it is likewise necessary to ascertain constantly the comparative temperature of the animal and of the atmosphere. The author recommends that the experimentor should obtain a mahogany box, with a glass lid, divided horizontally at its middle part by a fold of strong ribbon, and of such dimensions as just to contain the animal. The bat is then to be placed upon the ribbon, and enclosed by fixing the lid in its place. A thermometer with a cylindrical bulb is then to be passed through an orifice made in the box, on a level with the ribbon, under the epigastrium of the animal, and left in this situation. The thermometer should be so placed as to be seen without disturbing the inmate, whilst its indications can be compared with those of another thermometer hung up in the room to express the variations in the temperature of the atmospheric air. The doctor adds, that the layer of silk and the portion of air underneath are sufficient to protect the animal from the immediate influence of the temperature of the table, or whatever may be the support of the box. The phenomena of hybernation prove beyond all doubt the power of the animals who undergo it to sustain with impunity the privation of the atmospheric air. But the most extraordinary feature in this general fact is, that the exercise of this power is limited exclusively to the term of hybernation: for Dr. M. Hall placed a dormant bat in water, in which it remained immersed for eleven minutes, and came out uninjured; whilst a hedgehog, in the active condition of its existence, was put in the same element, and died in three minutes, the ordinary time in which drowning kills mammalia. In a paper previous to the present one, the same author had shown that in those cases in which the amount of respiration is small, the degree of irritability is high, and that, consequently, during the state of hybernation, the irritability of the animal is very sensibly augmented.

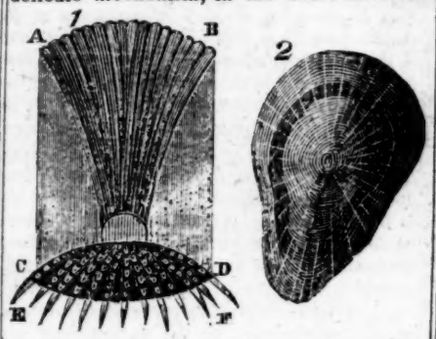
Now, if this reasoning were correct, it would necessarily follow, that, if the head of an animal were suddenly removed, and the heat of the heart observed afterwards, that heat would be found to continue longer if the experiment were tried in the hybernating state, than when it was done in the active condition of the animal. This result would undoubtedly show that irritability did increase when the respiration was diminished. The fact was placed beyond all doubt by Dr. M. Hall, in the following experiment: "On March 9th, soon after midnight, I took a hedgehog, which had been in a state of uninterrupted lethargy during 150 hours, and divided the spinal marrow just below the occiput; I then removed the brain, and destroyed the whole spinal marrow as gently as possible. The action of the heart continued vigorous during four hours, when seeing no prospect of a termination to the experiment, I resolved to envelope the animal in a wet cloth, and leave it until early in the morning. At seven o'clock, A. M., the beat of both sides of the heart still continued. They still continued to move at 10 A. M., each auricle and each ventricle contracting quite distinctly.

"At half past 11 A. M., all were equally motionless; yet all equally contracted on being stimulated by the point of a pen-knife. At noon the ventricles were alike unmoved, on being irritated as before; but both auricles contracted. Both auricles and ventricles were shortly afterwards irritable." A few weeks after this experiment, the spinal marrow of another hedgehog, in a state of activity, was simply divided at the occiput; the result was, that the beat of the left ventricle of the heart ceased almost immediately; that of the left auricle in less than a quarter of an hour; the right ventricle did not cease to beat before two hours from the time of death, whilst the right auricle ceased long before, though not so soon as the left auricle. The conclusions, then, which we are entitled to draw from these facts, are, that the irritability of the heart is strikingly increased in prolonged lethargy; and that in this state of the animal system the action of the heart continues without any dependence on the functions of the brain or spinal marrow. The general opinion hitherto has been, that during hybernation the sensibility of the animal is greatly impaired. The contrary is maintained by Dr. Hall, on the evidence of his own senses, for the slightest touch applied to one of the spines of the hedgehog, during hybernation, is sufficient to rouse it, and induce it to draw a deep respiration. The same respiration holds good with respect to the power of the animal to use its muscles. This remains perfectly unimpaired, and when there is insensibility or stiffness, then the animal is in a state of torpor, but not of hybernation. Again, though respiration is nearly suspended, the circulation still goes on; but, as it is of venous character, and as it wants the usual impulse, Dr. Hall assigns it to a place in the scale of animal life which is lower than that of the reptiles. The phenomena which are thus presented come before us in a series of facts, which it would be difficult for us to believe, if they were not put beyond all dispute by undoubted evidence. Anatomy and pathology alone can explain the strange process, by describing the increased irritability of the left side of the heart. A very important distinction is drawn by Dr. Hall, between true hybernation and torpor. Torpor may be produced by cold in any animal, and is attended by a benumbed state of the sentient nerves, and a stiffened condition of the muscles; it is the product of cold. But hybernation is limited to a certain number of animals; in it sensibility and power of motion remain unimpaired; its phenomena are produced through the medium of sleep. The nature of hybernation is determined, in a great measure, by the fact, that all hybernating animals avoid exposure to intense cold; but choose a retreat, make nests or burrows, congregate sometimes in clusters. The instinct by which the animals are led to make use of precautions is in connection with the law which requires that the change from the condition of hybernations to that of activity shall be slow and gradual, in as much as the state of the blood in one condition is compatible with the peculiar power of the heart in the other. The object is learnedly treated by Dr. Hall, and is well worthy the attention of scientific men.

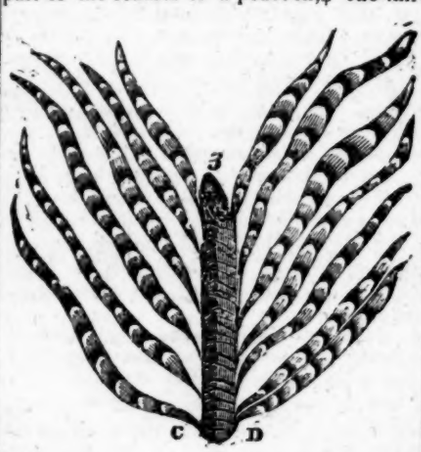
Wonders of the Microscope. [Arranged from Dr. Dick, on the Diffusion of Knowledge.]

In the universe we find all things constructed and arranged on the plan of *boundless and universal variety.* In the animal kingdom there have been actually ascertained about sixty thousand *different species* of living creatures. There are about 600 species of *mammalia*, or animals that suckle their young, most of which are quadrupeds—4000 species of *birds*, 3000 species of *fishes*, 700 species of *reptiles*, and 44,000 species of insects.* Besides these, there are about 3000 species of *shell fish*, and perhaps not less than eighty or a hundred thousand species of animalcules invisible to the naked eye; and new species are daily discovering, in consequence of the zeal and industry of the lovers of natural history. As the system of animated nature has never yet been thoroughly explored, we might safely reckon the number of species of animals of all kinds as amounting to at least *three hundred thousand.* We are next to consider that the organical structure of each species consists of an immense multitude of parts, and that all the species are infinitely diversified—differing from each other in their forms, organs, members, faculties, and motions. They are of all shapes and sizes, from the microscopic animalculum, ten thousand times less than a mite, to the elephant and the whale. They are different in respect of the construction of their sensitive organs. In regard to the *eye*, some have this organ placed in the front, so as to look directly forward, as in man; others have it so placed as to take in nearly a whole hemisphere, as in birds, hares, and conies; some have it fixed, and others moveable; some have *two* globes or balls, as quadrupeds; some have *four*, as snails, which are fixed in their horns; some have *eight*, set like a locket of diamonds, as spiders; some have several *hundreds*, as flies and beetles, and others above *twenty thousand*, as the dragon-fly and several species of butterflies. In regard to the *ear*—some have it large, erect, and open, as in the hare, to hear the least approach of danger; in some it is covered to keep out noxious bodies; and in others, as in the mole, it is lodged deep and backward in the head, and fenced and guarded from external injuries. With regard to their *clothing*—some have their bodies covered with hair, as quadrupeds; some with feathers, as birds; some with scales, as fish; some with shells, as the tortoise; some only with skin; some with stout and firm armor, as the rhinoceros; and others with prickles, as the hedgehog and porcupine—all nicely accommodated to the nature of the animal and the element in which it lives. These coverings, too, are adorned with *diversified* beauties; as appears in the plumage of birds, the feathers of the peacock, the scales of the finny tribes, the hair of quadrupeds, and the variegated polish and coloring of the tropical shell-fish—beauties which, in point of symmetry, polish, texture, variety, and exquisite coloring, mock every attempt of human art to copy or to imitate.

Not only in the objects which are visible to the unassisted eye, but also *in those which can only be perceived by the help of microscopes*, is the characteristic of *variety* to be seen. In the scales of fishes, for example, we perceive an infinite number of diversified specimens of the most curious workmanship. Some of these are of a longish form, some round, some triangular, some square; in short, of all imaginable variety of shapes. Some are armed with sharp prickles, as in the perch and sole;* some have smooth edges, as in the tench and codfish; and even in the same fish there is a considerable variety, for the scales taken from the belly, the back, the sides, the head, and other parts, are all different from each other. In the scale of a perch we perceive one piece of delicate mechanism, in the scale of a haddock† another, and in the scale of a sole beauties different from both.



We find some of them ornamented with a prodigious number of concentric flutings, too near each other and too fine to be easily enumerated. These flutings are frequently traversed by others diverging from the centre of the scale, and proceeding from thence in a straight line to the circumference. On every fish there are many thousands of these variegated pieces of mechanism. A small part of the feather of a peacock,‡ one-thirtieth of an inch in length, appears no less beautiful than the whole feather does to the naked eye, exhibiting a multitude of bright shining parts, reflecting first one color and then another in the most vivid manner. The *wings* of all kinds of insects, too, present an infinite variety, no less captivating to the mind than pleasing to the eye. They appear strengthened and distended by the finest bones, and covered with the lightest membranes. Some of them are adorned with neat and beautiful feathers, and many of them provided with the finest articulations and foldings for the wings, when they are withdrawn and about to be folded up in their cases. The thin membranes of the wings appear beautifully divaricated with thousands of little points, like silver studs. The wings of some flies are *filmy*, as the dragon-fly; others have them stuck over with short *bristles*, as the flesh-fly; some have rows of feathers along their ridges, and borders round their edge, as in gnats; some have hairs, and others have hooks, placed with the greatest regularity and order. In the wings of moths and butter-flies there are millions of small feathers of different shapes,* diversified with the greatest variety of bright and vivid colors, each of them so small as to be altogether invisible to the naked eye.



The variety of forms in which *animal life* appears, in those invisible departments of creation which the microscope has enabled us to explore, is truly wonderful and astonishing. Microscopic animals are so different from those of the larger kinds, that scarcely any analogy seems to exist between them; and one would be almost tempted to suppose that they lived in consequence of laws directly opposite to those which preserve man and the other larger animals in existence. When we endeavor to explore this region of animated nature, we feel as if we were entering on the confines of a new world, and surveying a new race of sentient existence. The number of these creatures exceeds all human calculation. Many hundreds of species, all differing in their forms, habits, and motions, have already been detected and described, but we have reason to believe that by far the greater part is unexplored, and perhaps forever hid from the view of man. They are of all shapes and forms: some of them appear like minute atoms, some like globes and spheroids, some like hand-bells, some like wheels turning on an axis, some like double-headed monsters, some like cylinders, some have a worm-like appearance, some have horns, some resemble eels, some are like long hairs, one hundred and fifty times as long as they are broad, some like spires and cupolas, some like fishes, and some like animated vegetables. Some of them are almost visible to the naked eye, and some so small that the breadth of a human hair would cover fifty or a hundred of them, and others so minute that

* Specimens of all these species are to be seen in the magnificent collections in the Museum of Natural History at Paris.

* Fig. 1 represents the *scale* of a *sole fish* as it appears through a good microscope. C D E F represents that part of the scale which appears on the outside of the fish, and A B C D the part which adheres to the skin, being furrowed, that it may hold the faster. It is terminated by pointed spikes, every alternate one being longer than the interjacent ones.

† Fig. 2 is the scale of a haddock, which appears divaricated like a piece of net-work.

‡ Fig. 3 represents a small portion or fibre of the *feather of a peacock*, only one-thirtieth of an inch in extent, as it appears in the microscope. The small fibres of these feathers appear, through this instrument, no less beautiful than the whole feather does to the naked eye. Each of the sprigs or hairs on each side of the fibre, as C D, D C, appears to consist of a multitude of bright shining parts, which are a congeries of small plates, &c. The under sides of each of these plates are very dark and opaque, reflecting all the rays thrown upon them like the foil of a looking-glass; but their upper sides seem to consist of a multitude of exceedingly thin plated bodies, lying close together, which, by various positions of the light, reflect first one color and then another, in a most vivid and surprizing manner.

* Figs. 4, 5, 6, 7, represent some of the different kinds of feathers which constitute the dust which adheres to the wings of moths and butterflies, and which, in the microscope, appear tinged with a variety of colors. Each of these feathers is an object so small as to be scarcely perceptible to the naked eye.

millions of millions of them might be contained within the compass of a square inch. In every pond and ditch, and almost in every puddle, in the infusions of pepper, straw, grass, oats, hay, and other vegetables, in paste and vinegar, and in the water found in oysters, on almost every plant and flower, and in the rivers, seas, and oceans, these creatures are found in such numbers and variety as almost to exceed our conception or belief. A class of these animals, called *Medusæ*, has been found so numerous as to discolor the ocean itself. Captain Scoresby found the number in the olive-green sea to be immense. A cubic inch contained sixty-four, and consequently a cubic mile would contain 23,888,000,000,000,000; so that, if one person should count a million in seven days, it would have required that eighty thousand persons should have started at the creation of the world to have completed the enumeration at the present time. Yet, all the minute animals to which we now allude are furnished with numerous organs of life as well as the larger kind, some of their internal movements are distinctly visible, their motions are evidently *voluntary*, and some of them appear to be possessed of a considerable degree of sagacity, and to be fond of each other's society.*

In short, it may be affirmed without the least hesitation, that the beauties and *varieties* which exist in those regions of creation which are invisible to the unassisted eye are far more numerous than all that appears to a common observer in the visible economy of nature. How far this scene of creating power and intelligence may extend beyond the range of our microscopic instruments, it is impossible for mortals to determine; for the finer our glasses are, and the higher the magnifying powers we apply, the more numerous and varied are the objects which they exhibit to our view. And as the largest telescope is insufficient to convey our views to the boundaries of the great universe, so we may justly conclude that the most powerful microscope that has been or ever will be constructed will be altogether insufficient to guide our views to the utmost limits of the descending scale of creation.

We shall now continue our illustrations:

Fig. 1 represents a *mite*, which has eight legs, with five or six joints in each, two feelers, a small head in proportion to its body, a sharp snout and mouth like that of a mole, and two little eyes. The body is of an oval form, with a number of hairs like bristles issuing from it, and the legs terminate in two hooked claws.

Fig. 2 represents a microscopic animal which was found in an infusion of *anemony*. The surface of its back is covered with a fine mask, in the form of a *human face;* it has three feet on each side, and a tail which comes out from under the mask.

Fig. 3 is an animalcula found in the infusion of *old hay*. A shows the head, with the mouth opened wide, and its lips furnished with numerous hairs; B is its forked tail; D its intestines, and C its heart, which may be seen in regular motion. The circumference of the body appears indented like the teeth of a saw.

Fig. 4 shows the *wheel-animal*, or *vorticella*. It is found in rain-water that has stood some days in leaden gutters, or in hollows of lead on the tops of houses. The most remarkable part of this animalcula is its *wheel-work*, which consists of two semi-circular instruments, round the edges of which many little fibrillæ move themselves very briskly, sometimes with a kind of rotation, and sometimes in a trembling or vibratory manner. Sometimes the wheels seem to be entire circles, with teeth like those of the balance-wheel of a watch; but their figure varies according to the degree of their protusion, and seems to depend upon the will of the animal itself; *a* is the head and wheels, *b* is the *heart*, where its systole and diastole are plainly visible, and the alternate motions of contraction and dilatation are performed with great strength and vigor, in about the same time as the pulsation of a man's artery. This animal assumes various shapes, one of which is represented at Fig. 5, and becomes occasionally a case for all the other parts of the body.

Fig. 6 represents *an insect with net-like arms*. It is found in cascades where the water runs very swift. Its body appears curiously turned as on a lathe, and at the tail are three sharp spines, by which it raises itself and stands upright in the water; but the most curious apparatus is about its head, where it is furnished with two instruments, like fans or nets, which serve to provide its food. These it frequently spreads out and draws in again, and, when drawn up, they are folded together with the utmost nicety and exactness. When this creature does not employ its nets, it thrusts out a pair of sharp horns, and puts on a different appearance, as in Fig. 7, where it is shown magnified about 400 times.

Fig. 8 is another animalcula, found in the same infusion, called a *tortoise*, with an umbilical tail. It stretches out and contracts itself very easily, sometimes assuming a round figure, which it retains only for a moment, then opens its mouth to a surprizing width, forming nearly the circumference of a circle. Its motion is very surprizing and singular.

Fig. 9 is the representation of an animalcula found in the infusion of *the bark of an oak*. Its body is composed of several ringlets, that enter one into another, as the animal contracts itself. At *a b* are two lips, furnished with moveable hairs; it pushes out of its mouth a *snout* composed of several pieces sheathed in each other, as at *c*. A kind of horn, *d*, is sometimes protruded from the breast, composed of furbelows, which slide into one another like the drawers of a pocket telescope.

Fig. 10 is an animalcula, called *great mouth*, which is found in several infusions. Its mouth takes up half the length of its body; its inside is filled with darkish spots, and its hinder part terminated with a singular tail.

Fig. 11 represents the *proteus*, so named on account of its assuming a great number of different shapes. Its most common shape bears a resemblance to that of a swan, and it swims to and fro with great vivacity. When it is alarmed, it suddenly draws in its long neck, transforming itself into the shape represented at *m*, and at other times it puts forth a new head and neck, with a kind of wheel machinery, as at *n*.

Fig. 12 is the *globe animal*, which appears exactly globular, having no appearance of either head, tail, or fins. It moves in all directions, forwards or backwards, up or down, either rolling over and over like a bowl, spinning horizontally like a top, or gliding along smoothly without turning itself at all. When it pleases, it can turn round, as it were upon an axis, very nimbly, without removing out of its place. It is transparent, except where the circular black spots are shown; it sometimes appears as if dotted with points, and beset with short moveable hairs or bristles, which are probably the instruments by which its motions are performed.

Fig. 13 shows a species of animalculæ called *soles*, found in infusions of straw and the ears of wheat; *o* is the mouth, which is sometimes extended to a great width, *p* is the tail.

Fig. 14 represents an animal found in an infusion of citron flowers. Its head is very short, and adorned with two horns like those of a deer; its body appears to be covered with scales, and its tail long, and swift in motion.

Fig. 15 is a representation of the *eels* which are found in paste and stale vinegar. The most remarkable property of these animals is that they are *viviparous*. If one of them is cut through near the middle, several oval bodies of different sizes issue forth, which are young *anguillæ*, each coiled up in its proper membrane. A hundred and upwards of the young ones have been seen to

* The following extract from Mr. Baker's description of the *hair-like animalcule* will illustrate some of these positions. A small quantity of the matter containing these animalcules having been put into a jar of water, it so happened that one part went down immediately to the bottom, while the other continued floating on the top. When things had remained for some time in this condition, each of these swarms of animalcules began to grow weary of its situation, and had a mind to change its quarters. Both armies, therefore, set out at the same time, the one proceeding upwards and the other downwards; so that after some time they met in the middle. A desire of knowing how they would behave on this occasion engaged the observer to watch them carefully; and, to his surprize, he saw the army that was marching upwards open to the right and left, to make room for those that were descending. Thus, without confusion or intermixture, each held on its way; the army that was going up marching in two columns to the top, and the other proceeding in one column to the bottom, as if each had been under the direction of wise leaders.

issue from the body of one single eel, which accounts for their prodigious increase.

Fig. 16 exhibits a species of animalcula shaped like bells with long tails, by which they fasten themselves to the roots of *duck-weed*, in which they were found. They dwell in colonies, from ten to fifteen in number.

It may not be improper to remark, that no engraving can give an adequate idea of the objects referred to above; and, therefore, whoever wishes to inspect nature in all her minute beauties and varieties must have recourse to the microscope itself.

What we already know of these unexplored and inexplorable regions gives us an amazing conception of the intelligence and wisdom of the Creator, of the immensity of his nature, and of the infinity of ideas which, during every portion of past duration, must have been present before his all-comprehensive mind. What an immense space in the scale of animal life intervenes between an *animalcule*, which appears only the size of a visible point, when magnified 500,000 times, and a *whale*, a hundred feet long and twenty broad! The proportion of bulk between the one of these beings and the other is nearly as 34,560,000,000,000,000,000 to 1. Yet all the intermediate space is filled up with animated beings of every form and order! A similar variety obtains in the vegetable kingdom. It has been calculated, that some plants which grow on *rose* leaves, and other shrubs, are so small that it would require more than a thousand of them, to equal in bulk a single plant of *moss;* and if we compare a stem of moss, which is generally not above one-sixtieth of an inch, with some of the large trees in Guinea and Brazil of twenty feet diameter, we shall find the bulk of the one will exceed that of the other no less than 2,985,984,000,000 times, which multiplied by 1,000 will produce 2,985,984,000,000,000, the number of times which the large tree exceeds the rose-leaf plant. Yet this immense interval is filled up with plants and trees of every form and size! With good reason, then, may we adopt the language of the inspired writers,—"How *manifold* are thy works, O Lord! In wisdom hast thou made them all."

METHOD OF PRESSING OIL IN CORFU.—The manufacture of oil is the principal, and the machines employed in it are the rudest possible. The olives are pressed under a perpendicular stone wheel, which revolves in a large sized horizontal stone of a circular form, somewhat hollowed in the centre. A horse or mule sets the machinery in motion, and a peasant runs before and shovels the olives under the approaching wheel, the action of which is necessarily confined to a limited space, while its power is very insignificant. The bruised mass is then transferred to a bag made of rushes or mat, which is subjected to a heavy pressure; this pressure is increased by means of a screw, wrought by two men at irregular intervals; for the labor is so violent that they cannot possibly continue long at it. They ship two strong bars after the manner of a capstan, and then, with a most savage yell, they urge them forward by a simultaneous dart, the effect of which is marked by a quantity of oil oozing through the mat, and falling into a hole cut in the ground for its reception. After an interval of forty or fifty seconds, the laborers dart forward again with similar violence, and with a bodily effort which must strain their whole frame. The quantity of oil that two expert laborers can express in a day is estimated at ten or twelve jars of rather more than four gallons each.—[Hennen's Medical Topography of the Mediterranean.]

Specification of the Patent granted to JOSEPH SAXTON, *of Sussex street, in the County of Middlesex, Mechanician, for Improvements in Propelling Carriages, and in Propelling Vessels for Inland Navigation.* Dated June 20, 1833. [From the Repertory of Patent Inventions.]

To all to whom these presents shall come, &c. &c.—*Now know ye*, that in compliance with the said proviso, I, the said Joseph Saxton, do hereby declare the nature of my invention, and the manner in which the same is to be performed, are fully described and ascertained in and by the following description thereof, reference being had to the drawing hereunto annexed, and to the figures and letters marked thereon, that is to say,

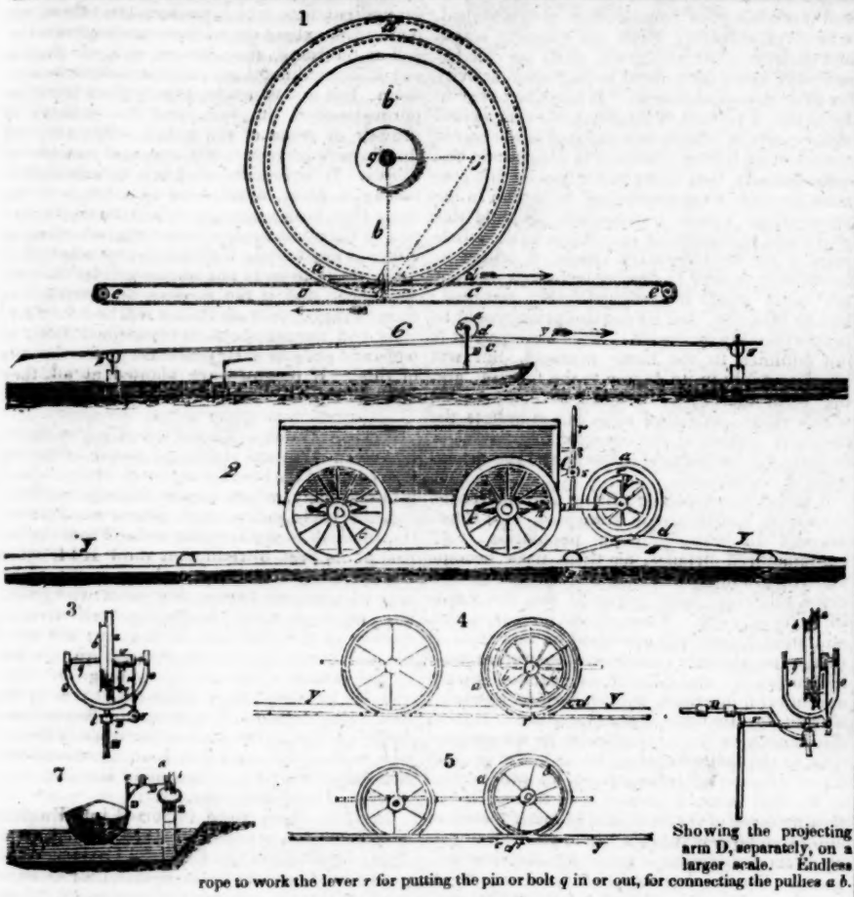
My invention consists in the application of pulleys of different diameters, which I denominate "The Differential Pulleys," or of a pulley and wheels, according to the principles hereafter described, whereby I am enabled to take advantage of the results which are obtained from such difference of diameter, by obtaining considerable velocity to carriages, or to vessels used in inland navigation, whilst the rope by which the motion is produced is caused to act through a very small space, in proportion to the distance travelled by the carriage, or by a vessel used in inland navigation, as will be fully described hereafter, when I come to describe the various figures shown in the drawing. But in order that my invention may be most fully understood, it will be desirable, in the first place, to go into a short description of the principles on which my improvements act, before I describe their application to carriages, and to vessels for inland navigation.

Fig. 1 represents a combination of two pulleys, their diameters being as six to seven, *a* being the larger pulley, and *b* the smaller one. *c d* is an endless rope, passing over the sheaves *e e;* and it should be observed, that this endless rope takes a turn around each of the pulleys, *a* and *b;* that is to say, the part *c* taking a turn around the larger pulley *a*, and the part *d* taking a turn around the smaller pulley *b*. If then the rope *d* be caused to move in the direction of the black arrow, (the upper one,) it will have a tendency to draw the lower part of the pulley *b* in the same direction with the rope *d*, meanwhile the part *c* of the endless rope will be moving in the direction of the dotted arrow, (the lower one,) and will have a tendency to move the lower part of the pulley *a* in the same direction with this part of the rope; consequently, the two pulleys *a b*, (they being fixed together,) would turn on the mean point *f*, as a fulcrum. *g* is the centre of the two pulleys. Let it then be supposed that the part *d* of the endless rope be moved from *h* to *i*, it will be evident that the centre *g*, of the differential pulleys, *a b*, would be moved to the point *j;* and, consequently, if any object were connected to the centre *g*, of these differential pulleys, it would be propelled from *g* to *j*, by the endless rope, *c d*, being moved the much smaller distance of *h* to *i*, as is clearly indicated by the dotted lines, and these distances will be as thirteen to one.

Having now shown the principles on which the differential pulleys act, the various applications hereafter described will be readily understood. And I would observe, that in all the other figures in the drawing, the same letters of reference will be used to indicate similar parts, wherever they occur.

Fig. 2 represents my improvements applied to a carriage, the construction of which is represented to be an omnibus for the carriage of passengers; but it is evident the description of carriage is immaterial, and will vary to suit the purposes to which the carriages are to be applied. The carriage is placed on four wheels, as usual, two of which wheels, *k*, *k*, are shown in this figure. *a*, and *b*, are the differential pulleys, applied to the carriage according to my invention, *a* being the larger pulley, and *b* the smaller one. These pulleys are placed on an axis *g*, see fig. 3, which represents the pulleys, together with the parts in which they are placed. *m* is an arm or frame, which carries the differential pulleys, and which is fixed to the carriage, as shown at fig. 2: the arm *m*, being cylindrical, and capable of turning in bearings, *n n*, affixed to the carriage. The object of this turning of the arm *m*, is to permit the pulleys *a*, *b*, to stand at an angle, by which the endless rope may be led into the sheaves, when the carriage is going in a curved direction. The projecting arm *m* is forked at the outer end, as shown in figs. 2 and 3, at *o o;* and the forked ends serve as bearings to the axle *g*, of the differential pulleys, *a* and *b*, the pulley *a* being permanently affixed to the axle *g*, whilst the pulley *b* is capable of turning loosely on this axis, when it is not retained by the pin or bolt *q*, which locks the two pulleys, *a* and *b*, together at the times required, and thus they are at such times the same as if they were permanently attached to each other; the object of thus having the means of disconnecting the two pulleys, *a* and *b*, is, that by disconnecting them, the power will no longer tend to drive the carriage, as will be fully described hereafter. *r*, fig. 2, is a lever, turning on a fulcrum *s*, the bearing of which fulcrum is attached to the carriage. The upper end of this lever, *r*, is formed into a handle, and is in such a position, that a person sitting in front of the carriage may have it under his control; the other end of the lever *r*, that is, the part below the fulcrum, has a crotch, which receives the flanch *t*, of a sliding-socket *t*, within it, as shown in fig. 2: this socket slides on the arm *m*, according as the lever *r* is moved out from, or drawn towards, the carriage. *u*, is a cranked or bent lever, having its fulcrum at *v*, on the forked frame *m o*, as shown in fig. 3. One end of this cranked lever *u* has a crotch, which receives the flanch *t*, of the sliding socket *t*, see fig. 3; and the other end of the bent or cranked lever *u* has also a crotch therein, by which it is enabled to slide the socket *w*, on the axis *g*, backwards and forwards. *x*, is an arm, affixed to the sliding socket *w*, through which the bolt or pin *q* passes, and this pin or bolt passes through one of the spokes of the wheel or pully *a;* and when it protrudes beyond the pulley *a*, it passes between the spokes of the pulley *b*, and, consequently, when the pin or bolt *q*, comes in contact with one of the spokes, or the part of the inner rim of the pulley *v*, which is cut away (as shown in fig. 2) for that purpose, the two pulleys will be held securely together. On the bolt *q* is placed a spiral spring, its object being, that in case the lever *r* be moved for the purpose of forcing in the bolt *q*, at a time when it is not opposite the part of the inner rim which is cut away, the spiral spring will have a tendency to force in the bolt, yet at the same time will not offer sufficient resistance to prevent the turning of the pulley, and the bolt *q* will be forced in, when the part of the pulley where it is cut away comes opposite to the bolt; at the same time there is a spring to prevent a sudden concussion.

In fig. 2, *c d* is an endless rope, the part *c* taking a turn around the pulley *a*, and the part *d* taking a turn around the pulley *b*, as described in fig. 1. This endless rope is supported, at proper intervals of the road, on sheaves (as shown in fig. 2,) to prevent the rope falling on the ground, and thereby greatly increase the friction; this endless rope passes around a rigger at each end, by which the rope is kept sufficiently tight; but to insure the endless rope being kept sufficiently tight, I cause one of the riggers around which the rope passes to be placed in bearings capable of being slided in the direction of the length of the railway on which



Showing the projecting arm D, separately, on a larger scale. Endless rope to work the lever *r* for putting the pin or bolt *q* in or out, for connecting the pullies *a b*. *y y*, endless rope—*z z*, sheaves.

the carriage travels, and then, by means of weights attached to a rope or chain, and passing over a pulley affixed at the top of a well, and having sufficient weights attached to keep the endless rope, *c d*, sufficiently tight to prevent it sliding on the differential pulleys, *a b*.

Having now described the various parts shown in figs. 2 and 3, I will proceed to describe the manner of their action; in doing which, I will suppose the bolt or pin is passed through the two pulleys, *a* and *b*, and thus retains them together, as if they were permanently fixed to each other. If, then, the endless rope *d* be moved in the direction of the arrow, a similar action will take place to that described in fig. 1, that is, the carriage, being attached to the centre *g*, of the differential pulleys, *a* and *b*, will be propelled forward on a railway with a much greater velocity than the rope travels; and the distance so travelled by the carriage, in comparison with the distance through which the rope moves, will depend on the difference of the diameters of the pulleys, *a b*; and the nearer the respective diameters of the pulleys approach each other, the greater will be the relative velocity the carriage will travel, to the velocity with which the rope moves.

In order to prevent the two parts of the rope rubbing against each other, in leading on and off the differential pulleys, the axis *g* of these pulleys is placed at an angle, a little varying from a right angle with the direction of the motion of the carriage.

Figs. 4 and 5 show two applications of my improvements, but in these figures the applications somewhat vary from that shown in fig. 2; for in these instances there is only one pulley, whilst the two front or two back wheels of the carriage act the part of the other pulley.

In fig. 4, *a* is one of the front wheels of the carriage, which also acts as the larger pulley; *b* is the smaller pulley, and is the only one around which the rope, *c d*, passes. The wheels *a*, and the pulley *b*, being on the same axis *g*, which runs from side to side of the carriage, and turns in bearings affixed to the carriage.

In this arrangement, the point *f*, at which the wheels touch the rail, becomes the fulcrum on which the wheel *a* turns; and it will thus be evident, that if the rope, *c d*, be drawn forward, in the direction of the arrow, a similar effect will be produced, as described in fig. 2, and as is clearly shown by dotted lines in fig. 4; yet, at the same time, if the wheels and pulleys, *a* and *b*, be of the same relative diameters as those in fig. 2, the carriage at fig. 4 would only be propelled at the velocity of seven to one, owing to the fulcrum, at which the wheels *a* turn, being removed from the main point *f*, fig. 2, between the two diameters, and placed at the extreme end of a radiating line, drawn from the centre of the wheel *a*, to the point at which it touches the railway.

In fig. 5, the rope passes around the pulley *a*, which is larger, whilst the carriage-wheels act the part of the smaller pulley *b*. The pulley *a*, and the wheels *b*, being on the same axis *g*.

In order that the pulleys in this arrangement may stand at an angle for clearing the rope, the axle *g*, is formed of three parts, connected by universal joints, and one of the wheels *b* thus travels a little forwarder than the other, and thus the rope will clear itself. And it should be observed, that in both these arrangements, the pulley around which the rope passes is to be made capable of being disconnected from revolving with the axle, as described in figs. 2 and 3. In the arrangement, fig. 5, the fulcrum *f*, on which the wheels turn, is the point at which the wheels *b* touch the rail or road; and the difference in the arrangements figs. 4 and 5, is, that the power in fig. 4 is applied by the rope between the fulcrum *f*, and the centre *g*, of the wheels or pulleys, *a b*, where the weight to be drawn is attached; whilst in fig. 5, the fulcrum is between the centre of the pulley and wheels, *a b*; consequently, the arrangements differ in the order of leverage, and in this instance the velocity will be as six to one.

In these two last arrangements, the rope, *c d*, may be either an endless rope, as described in figs. 1 and 2, or the rope may be single, and taking a turn around the pulley *a*, or *b*, is to be wound on and off a drum at each end of the distance, which is to be run by one length of rope.

Having now described my improvements, as applicable to the propelling of carriages, I will proceed to describe their application to the propelling of vessels in inland navigation. This application is an arrangement similar to that shown and described in figs. 2 and 3. A representing a canal barge or boat, having an upright standard B, affixed on one side thereof, see figs. 6 and 7; at the top of this standard, the bearings, c c, are formed to receive the projecting arm D: in other respects the parts are similar to fig. 2, and the same letters are used to denote the various parts.

At proper intervals sheaves are placed on standards at the side of the canal or river, to support the rope *c d*, as shown in these figures. In propelling vessels, the same description given of figs. 1 and 2 applies, and is fully descriptive of the effect which takes place by the application of my improvements.

Having now described the nature of my invention, and the manner of constructing and applying the same, I would observe, that the power to be employed for causing the rope, *c d*, to be moved, may be varied according to circumstances. Thus, for instance, by attaching a horse or horses, according to the power required, to the rope, *c d*, and causing it to move slowly, a very considerable velocity will be obtained; or the power may be derived from a fixed steam engine, or water-wheel, or manual labor. And in order to have perfect control over the carriage or vessel, and be enabled to stop at any time, although the rope is continuing to move, it will be necessary to separate the two pulleys, *a b*, by withdrawing the pin or bolt *q*; the power will then no longer act to propel the carriage or vessel, and, consequently, there will only be the momentum already obtained, by the carriage or vessel, to be overcome, and this in a carriage may be effected by aid of a brake on any of the carriage wheels, *k*.

Having now fully described the manner of applying and using my invention, I would have it understood, that I lay no claim to the parts separately of which the same is composed; and I would observe, that some of the details may be varied to meet the various circumstances to which works of this kind are at all times liable, but which will be readily arranged and adopted by any engineer competent to undertake works of the like nature. And I would further observe, that I am aware that endless ropes, as well as drag-ropes, have been before known and used for the purposes of propelling carriages and vessels, but in such cases the carriage or vessel travels only at the rate of speed with the rope; therefore, the use of an endless rope or a drag-rope forms no part of my invention, and are only necessary means for effecting the object of my invention, as above described. And I do hereby declare, that I confine my claim of "Improvements in propelling Carriages, and in propelling Vessels for Inland Navigation," to the application of the differential pulleys, or of a pulley and wheels, *a b*, for propelling carriages and vessels, as above described, whereby I am enabled to take advantage of the results which are obtained from the difference of their diameters, and thus obtaining considerable velocity to such carriages and vessels, whilst the rope by which the motion, of the carriage or vessel, is produced, is caused to act through a very small space, in proportion to the distance travelled by the carriage or vessel, as above described.

In witness whereof, &c.

CHEAP ANTIDOTE.—There is not a house in the country that does not contain a remedy for poison, if instantly administered. It is nothing more than two tea-spoonsful of made mustard,

mixed in warm water. It acts as an instantaneous emetic. Making this simple antidote known may be the means of saving many a fellow creature from an untimely death.—[New England Farmer.]

Internal Improvements, No. I. By F. To the Editor of the American Railroad Journal, and Advocate of Internal Improvements.

SIR,—Mechanical knowledge is now making rapid strides towards perfection, exercising in its progress a genial influence over the arts and sciences of the civilized world, strengthening its ties of intercourse, and dispensing plenty and intelligence where formerly misery and ignorance held their sway. The invention of the steam engine alone may be regarded as a new era in the domestic policy of nations, and since the important step made by Watt in reducing its principles to practical application by an investigation of its physical properties, its course has been steadily onward, engaging in its service more talent, ingenuity, and labor, and producing more national and individual wealth, than any other human invention. Its gradual development gave an impetus that has led to all the numerous discoveries and improvements in the different branches of manufactures, and raised them to their present high state of perfection. But a few years have elapsed when the wondrous effects now resulting from the application of this subtile fluid, before its capacity of adaptation was known, could only have found place to grace the pages of fiction, or adorn a tale of romance. Who would then have credited the assertion, if made, that hundreds were under its influence, daily travelling the country, navigating rivers, and traversing lakes and seas, at the rate of thirty miles per hour; and that at this high degree of velocity they were in the indulgence of every luxury and comfort that their own private apartments could afford! Had its accomplishment been then predicted, instead of serving as a beacon-light to guide the intelligence of men of science and learning, it would have been treated simply as the wild dream of an enthusiast, and elicited naught save contempt from many who are now proud to acknowledge themselves among its warmest advocates. For there are many persons still living, scarce passed the meridian of life, who blush to have regarded the idea as visionary; and, refusing the subject the effort of a thought, have even suspected the intellect of the person who predicted its eventual realization. Strange as this incredulity may now appear, it is none the less true; and a few years may yet prove to us that the principle is in its infancy; that it is destined to fulfil still higher duties; and that its sphere of usefulness is to be widely extended. It would be no unprofitable lesson to mark the influence which physical science, in its different stages, has exercised over the moral and political character of nations. It would be found that nearly in the same proportion that mechanics have advanced towards perfection, the world has advanced in civilization; that as its principles have been developed, its condition has been bettered; in short, it has been one of the grand moving principles by which these effects have been produced. But this investigation becomes not the present paper; and however grateful be the task to pay a passing tribute to the inventive talents and sublime genius of the great men who have preceded us, and laid the foundation on which the superstructure of civilization is being reared, it must be abstained from here to give place to the matter more immediately claiming our attention.

The astonishing change effected by the system of internal improvements, in the transition of persons and intelligence from place to place, has been productive of consequences not easily to be calculated. Distances being now estimated by *time* instead of *miles*, the mind and exertion of communities, hitherto isolated and deprived the benefits of free intercourse, become concentrated in proportion with the increased velocity of locomotion. A mutual dependance and interchange of commodities is established, which, in enlarging ideas and creating wants and desires before unknown, must operate beneficially as an incitement to increased activity for their accomplishment. It must be borne in mind that a portion of the price of every article of necessity or luxury is composed of the cost of transporting it from producer to consumer; and consequently, that every reduction in this cost must produce a corresponding reduction in the price of the article transported. Should this portion be considerable in relation to the whole price of the manufactured article, it would be no difficult matter to demonstrate that its market value would be proportionably lessened; and as lessened, that its consumption would be proportionably increased. This observation is not confined to the home markets, but will likewise apply in its degree to the foreign, giving birth thereby to a spirit of competition, which alone, on either side, can stimulate the inventive genius of the operator to greater enterprize for the palm of mastery and the attainment of excellence.

Another consequence arising from increased cheapness and facility of transport, is a fresh demand for manufacturing population. All manufactured articles, as their uses become known, gradually cease to be regarded as luxuries, and enter more generally into the wants of every-day life. To meet the increased consumption necessarily attendant on this state of things, an increased number of operators must be employed; and this, in its reaction on the agricultural interests, will produce an extended market for that species of produce. Indeed, the benefit to the agriculturist is far greater than to the manufacturer; because the proportional expense of transporting all productions of the soil is much greater than that of transporting those of the loom, and in many instances enters so largely into its whole price as to preclude its cultivation, except for domestic purposes. To the agriculturist, therefore, it becomes a matter of still higher import that such means be devised as will place him on a more equitable footing with his more fortunate neighbors; and to this end he should, before the tide of prosperity has entirely run out and left him a prey to want, in some unfriendly shoal, direct his remaining energies to the accomplishment of such improvements of intercourse as nature and art may have placed at his disposal.

It is disagreeable to anticipate even in thought what might be the result of a continued deprivation of these facilities to any community, where indolence has taken the place of industry; and vice and misery, its usual concomitants, have breathed their pestilential influence over the actions of its members. Many a melancholy picture might be adduced in illustration from the experience of other countries, at the bare relation of which the heart of the philanthropist would sicken in sorrow, and many a parallel might have been deplored as a curse to this happy country, had not the soaring genius of a Clinton, in defiance of the vulgar prejudices of the day, predicted and finally executed a work that will command the admiration of ages, and stand a cenotaph to perpetuate his name to a grateful posterity. F.

New-York, 10th Nov. 1833.

CULTURE OF POTATOES.—A frequent change of seed is necessary. Any sort may be continued fertile and profitable by removing them from one county to another every fourth or fifth year, or by raising them alternately on very different descriptions of soil. In the cultivation of this useful plant, it appears from many experiments that it requires ample space. In field culture, placing the sets of the strong growing kinds in every third furrow, and those of the dwarfer sorts in every second, are eligible distances. There are different opinions held respecting the necessity of earthing up potatoes. On very thin soils, however, it is absolutely necessary. On deeply ploughed, or trenched ground, earthing up the stems is certainly less necessary, because as the under ground runners, which produce the tubers, are inclined to extend themselves as deeply in the soil as the roots, they do not seem to require any additional depth of earth immediately over them. But this depends entirely upon the open porousness of the soil, and the manner of growth of some of the kinds. Plucking off the flowers increases the size and number of tubers. It is founded on a law of nature, disposing a plant, constituted to produce at the same time both seeds and tubers, to yield either one or the other more abundantly, according as either is destroyed. If tubers be not allowed to form, many flowers and apples will be the consequence; and if the flowers be destroyed as soon as they appear, the tubes will be increased. It is bad management to plant the refuse, or odds and ends of last year's crop, for the sets of this. If potatoes are planted at all, they should be planted well.—[Br. Far. Mag.]

SAXONY WOOL.—To the late King of Saxony, when Elector, is due the merit of having first brought the breed of Spanish Merino sheep into Germany, which has since transferred the valuable trade in fine wool almost wholly from the Spanish to the German soil. From the period of its first introduction until 1814, when Europe once more began to enjoy the blessings of a general peace, this wool was gradually, although slowly, spreading itself over the surface of the kingdom of Saxony; but when the continental trade was thrown quite open, by the events of the short campaign of 1815, and the minds of men were set at rest by the final catastrophe of Napoleon, the Saxon wool dealers began to open a regular trade in the article to England, and they soon discovered the real value of this new branch of German commerce. In the first year, viz.:

In 1814, there were imported into England only 3,593,146 pounds; in 1819, 4,557,933; in 1824, 15,432,657; in 1828, 23,110,882. This prodigious increase in the demand for German wool naturally excited the emulation of the States lying contiguous to Saxony; and the flock masters of that kingdom carried on, for a considerable period, a very prosperous trade in rams and ewes with the land owners of Silesia, Bohemia, Austria, and other parts, who were desirous of changing the nature of their flocks to this more profitable breed. All the superabundance of grain, which had no external vent to carry it off, was given to the sheep, in order to accelerate their approach to the maximum degree of fineness of which their wool was susceptible; thus actually creating a profitable consumption for their corn, through the engerness exhibited in England to obtain a superior quality of wool.—[Quar. Journal.]

THE WATER SPIDER.—The habitation of this insect (*Aranea Aquatica*) is chiefly remarkable for the element in which it is constructed, and the materials that compose it, being built in the midst of water and in fact of air, a very uncomfortable one certainly, were it constantly wet; but this the sagacious insect has the means of avoiding, and by availing itself of some well known philosophical principles, constructs for itself an apartment in which it resides in comfort and security. The following is the process: *First*, It spins loose threads in various directions to the leaves of water plants, which may be called the frame-work of the chamber, and over them spreads a transparent varnish, resembling liquid glass, which issues from the middle of its spinners, and which is so elastic as to be capable of great expansion and contraction. The spider then spreads over its belly a little of the same material, and ascends to the surface. The precise mode in which a bubble of air is drawn in beneath the gummy matter is not accurately known; loaded, however, with the material for its little mansion, which, to the spectator, looks like shining quicksilver, the spider plunges to the bottom, and with as much dexterity as a chemist transfers gas into a gasholder, introduces the bubble of air beneath the roof prepared for

its reception. This manœuvre is repeated ten or twelve times, until, at length, in about a quarter of an hour, as much air is obtained as is sufficient to expand the apartment to its proposed extent, and the industrious little builder now finds itself in possession of a perfect air-built dwelling, affording a commodious and dry retreat in the midst of water. Here the inhabitant reposes unmoved by the storms that agitate the surface of the pool, and devours its prey at ease and safety.

Capt. Riley, so well known to the public by the account of his sufferings while a captive among the Arabs of the African desert, as well as for his benevolent character, has recently returned from a voyage to Mogadore, and presented to the American Colonization Society *twelve bushels of Barbary wheat*, in hopes that it may be better adapted to the soil of Liberia than the grain of this country. This wheat is thought the best in the world, and flourishes in a climate where frosts are never known. Should it suit the Liberia climate, it must prove a most valuable grain for the colony.

To destroy Woodlice.—Perhaps in cucumber or melon frames nothing is more destructive than woodlice. Confining a toad in the frame or pit is an effectual remedy for the evil, but many persons would think the cure as bad as the disease itself, for they would be unable to eat the produce, from the recollection that the toad might have touched them. One method pursued with success is to make in the soil, close round the edges of the frame, a kind of hollow basin about six inches wide, and to fill this up with short hay to about the thickness of two inches. This, in the course of the first night, will become a place of retreat for them, and at about nine or ten o'clock in the morning, having opened the frame, pour upon this hay, with a wide rose watering-pot, a considerable quantity of boiling water. Then remove the hay and dead woodlice, and place a fresh supply of dry hay. Repeat this operation for two or three days, and you will see no more woodlice. Another system is to sink a pan half full of water in the soil, its rim being level with the surface, then to throw in a few slices of ripe fruit, and place a slate or piece of pot over it, leaving only sufficient room for the entrance of the depredators. Examine this every morning, and destroy all such as are found therein. The pan may also be filled with hay and pieces of fruit, such as apricot, &c. being laid in, they will quickly entice these depredators, which on removing you may destroy. Another very effectual method, is to slice the tuberous roots of the Bryony (bronia dioica,) a well known plant, and very common in our hedges, and to put a few of these slices into a common feeder, covering them over with a little moss or short hay, and placing them in different parts of the beds. Take out the pans the next morning, and after having removed the moss and baits, cast the woodlice into boiling water.—[Hor. Reg.]

Rubus Roridus. *Dewy Bramble.*—This rare species is a native of Madagascar, and strikingly different from all the known species of simple leaved brambles, in its finely cut stipules and bractæ, which are covered over with numerous little transparent green glands, giving all the parts that surround the petals an appearance of being sprinkled with green dew. Its flowers are white, and by no means showy. We presume it requires the green-house, and may be easily multiplied by layers.—[Bot. Reg.]

Bone Dust as Manure for Turnips.—Although the quantity of bone dust usually applied to an acre is two quarters, yet one quarter will suffice if mixed with one or two quarters of riddled coal ashes. The bones should be carefully and equally mixed throughout the mass, which will be best effected by frequent turnings with the shovel. To expedite the drying of the ashes, strew a little hot lime, while turning the mass. The compost is sown with the usual machine. Turnips raised with this compost of bone dust and ashes, in the quantity alluded to, have been sold for £7 per acre, to be eaten off with sheep. They possess the same characters of a close crop, firm root, and hardiness to resist the rigor of winter, as turnips raised with bone dust alone evince. Perhaps peat, or vegetable ashes of any kind, would be equally as beneficial to mix with bone dust as those of coal.—[Jour. of Agricul.]

European Opuntia.—An interesting fact relating to the common European Opuntia is mentioned by M. De Candolle. "Among the practical consequences," he observes, "that result from the facility with which Cacti strike from cuttings, there is one which deserves to be noticed on account of its importance, viz.: the manner in which the Opuntia is employed to fertilize the old lavas at the foot of Mount Etna. As soon as a fissure is perceived, a branch or joint of an Opuntia is stuck in, and the latter pushes out roots, which are nourished by the rain that collects round them, or by whatever dust or organic remains may have collected into a little soil. These roots, once developed, insinuate themselves into the most minute crevices, expand, and finally break up the lava into mere fragments. Opuntia treated in this manner produce a great deal of fruit, which is sold as a refreshing food throughout all the towns of Sicily."—[Bot. Reg.]

Massachusetts Silk.—We observe that the Bristol County Agricultural Society have awarded four premiums for white mulberry trees, two of which were given for those planted expressly for the making of silk on the same farms. The whole number of trees entered for the premiums was over 70,000.

Elephants for Ploughing.—Elephants are now used in Ceylon for ploughing the rice fields, and in preparing new ground for the cultivation of coffee, pepper, &c. An elephant will perform the work in one day which twenty bullocks were in the habit of performing before. In a country like Ceylon, which is very thinly inhabited, by this system of employing Elephants, much time is saved, and a great deal of agricultural work performed. An Elephant may be purchased in Ceylon at any time for 10 or £15.

On the Diffusion of Seeds.—The economy of Providence in distributing seeds may be remarked in those of the dandelion (Leontadon Taraxacum,) which are every where to be seen during the summer, floating about on the air, supported by its feathery down. It is not to be supposed that half of these seeds ever fall upon spots favorable to germination; but when so great a number of them, and of their congeners of the class syngenesia, are scattered about by the winds, it almost raises the chance to certainty that some of them will fall in spots where before there has been none, or only a scanty vegetation—on the tops of walls, for instance, where a thin stratum of soil has been formed by the decay of the winter crop of mosses. The process of the formation of such soil is exceedingly interesting, and may be observed on a small scale, even in cities, on brick or stone walls. First, there is the green incrustation, called Byssus by Linnæus, but recently proved to be the primary germination of several mosses, such as Polytricha and Tortuta. When this decays, a very thin layer of vegetable earth is formed, which affords a scanty support for the roots of the next year's crop of mosses; and in process of time soil is formed of sufficient depth for Draba Verna, and other plants. A singular contrivance is conspicuous in one of our wild cresses (Cardamine impatians) as well as in the balsams and in touch-me-not (Impatiens noli metangere) a native plant of the same genus. In all of these, when the seed is ripe, the valves which enclose it are so constructed that, by the influence of the sun's heat, they open with a sudden jerk, and throw the seeds to a considerable distance. The same effect is produced sooner, and with more force, when the ripe seed vessel is touched by the hand, or by any accidental waving of the leaves against it. Were we disposed to refine upon the final cause of this (a subject very ready to mislead,) we might say this jerking of the seeds was contrived, not only for their diffusion, but for their preservation from birds and insects, since the instant that these should begin to devour them, the springs of the valves would be thrown into action, and the seeds scattered about before a single one could be secured for a meal. In the wood sorrel (Oxalis acetosella) as well as in the horned sorrel (O. corniculata) the structure of these valves is very beautiful, but no description could do justice, not even with the aid of figures. The first, however, abounds in most woods; and the latter, where it has been introduced as a flower, soon becomes, from the circumstances under consideration, a very troublesome weed. One of the most beautiful contrivances for the diffusion of seeds occurs in various species of violets. The seeds of this order of plants are contained in a capsule of a single loculament, consisting, however, of three valves. To the inner part of each of these valves the seeds are attached and remain so for some time after the valves, in the process of ripening, have separated, and stood open. The influence of the sun's heat, however, causes the sides of each valve to shrink and collapse: and in this state the edges press firmly upon the seed, which, from being before apparently irregular in its arrangement, comes into a straight line. The seeds, it may be remarked, are not only extremely smooth, polished, and shining, but regularly egg-shaped: so that, when pressed upon the collapsing edge of the valve, it slides gradually down the sloping parts of the seed, and throws it with a jerk to a considerable distance. There is another part in the contrivance of Providence for the same purpose, in the violaceæ, worthy of remark. Before the seed is ripe, the capsule hangs in a drooping position, with the presiding calyx spread over it like an umbrella to guard it from the rain and dews which would retard the process of ripening; but no sooner is the ripening completed, than the capsule becomes upright, with the calyx for a support. Some ripe capsule of viola tricolor, which I planted in a shallow paste board box in a drawer, were found to have projected their seeds to a distance of nearly two feet. From the elevation of a capsule, therefore, at the top of a tall plant, I should think these seeds might be projected twice or thrice that distance.—[Reunie's Magazine of Botany.]

Steam Carriages Abroad.—We learn, from a correspondent at Brussels, that King Leopold is taking a very active part in the introduction of steam carriages into Belgium, which, being generally a flat country, is extremely well suited to vehicles of this description. His Majesty has appointed a commission, consisting of Count Hompesch (president), Count Vilain XIV., M. Eagleo, banker, Colonel Schenofsky, and M. Jobard, manufacturer, to watch over the progress of this improved mode of transport, and to facilitate its general adoption by every possible means. The chief Belgian competitors in this line, at present, are M. Deitz, senior, (the inventor, we believe, of the steam-engine lately described in this Journal,) and a M. Couchans, of Charleroi, both of whom have been making experimental trials, with carriages of their own construction, in the neighborhood of Brussels. The carriage of Deitz seems, from the description sent to us, to be rather a stupendous affair—eight tons weight, and fourteen feet high! It is hung, however, on springs—enormous steel springs (*sur d'enormes ressorts d'acier.*) The boiler is composed of six elliptical chambers, placed in pairs one above the other, which contain altogether 240 square feet of heating surface. There are two pistons, which turn two cranks, which turn two pullies, which carry two endless chains, which turn the two hind wheels, by which (alone) the carriage is propelled. There is but one wheel in front, and that is used as a guide wheel. The engine is stated to be able, in ascending hills, to exert a power of 120 horses, and there appears to be some arrangement by which in such cases the wheels may have the help of cogs (*sont garnies de billets de bois de bout.*) The river steam-carriage of M. Couchans has four wheels. The circumference of the wheels is stated to be "elastic," which means, we presume, that they are constructed on the give and take principle of our Messrs. Jones and Company's patent wheels. The results of experiments hitherto made with these carriages are but indifferent. The greatest speed realized is likened to the "*galop d'un bon cheval.*" However, every new exhibition attracts "*une grande affluence de curieux,*" and is concluded "*au milieu des braves de la foule;*" and at Brussels, as in London, no doubt is entertained, by the generality of people, that the day is close at hand when steam carriages will be the only vehicle in vogue on common roads.—[Mechanics' Magazine.]

ON THE PROXIMATE CAUSES OF WINDS AND STORMS.—The four following propositions may be regarded as statements of general facts, which have been sufficiently established by numerous observations in various parts of the world.

1st. That part of the great ocean which lies between the thirtieth parallel of latitude on both sides of the equator is constantly swept by a wind varying but a few points from the east.

2d. Between the latitudes of 30 and 60 degrees in both the northern hemispheres, westerly winds predominate over those from the east quarter, in a ratio probably somewhat greater than that of three to two.

3d. There is in all latitudes (a few trades of limited extent where local causes have a decided effect excepted) a predominance of winds blowing from the poles towards the equator, over those moving in the opposite direction, but this predominance is not so well marked and decided as that of the westerly over the easterly winds, between the latitudes of 30 and 60 degrees.

4th. During the warm weather within the temperate, and at all seasons within the limits of the torrid zone, the fall of rain is often accompanied by lightning, thunder, and violent winds, constituting what is commonly called a thunder-storm. Thunder-storms generally commence between mid-day and sun-set, and move from west to east.—[Prof. Mitchell.]

SPLITTING ROCKS.—In the granite quarries near Seringapatam, the most enormous blocks are separated from the solid rock by the following neat and simple process. The workman having found a portion of the rock sufficiently extensive, and situated near the edge of the part already quarried, lays bare the upper surface, and marks on it a line in the direction of the intended separation, along which a groove is cut with a chisel, about a couple of inches in depth. Above this groove a line of fire is kindled, and this is maintained till the rock below is thoroughly heated, immediately on which a line of men and women, each provided with a pot of cold water, suddenly sweep off the ashes, and pour the water in the heated groove, when the rock at once splits with a clean fracture. Square blocks, of six feet in the side and upwards of 80 feet in length, are sometimes detached by this method. Hardly less simple and efficacious is the process used in some parts of France, where millstones are made. When a mass sufficiently large is found, it is cut into a round form, several feet high, and the question then arises, how to divide this into pieces of a proper size for millstones. For this purpose grooves are chiseled out, at distances corresponding to the thickness intended to be given to the millstones, into which grooves wedges of dried wood are driven. These wedges are then wetted, or exposed to the dew, and next morning the block of stone is found separated into pieces of a proper size for millstones, merely by the expansion of the wood, consequent on its absorption of moisture; an irresistible natural power thus finishing, almost without any trouble, and at no expense, an operation which, from the peculiar hardness of the texture of the stone, would otherwise be impracticable but by the most powerful machinery, or the most persevering labor.

ANATOMY OF THE HORSE'S FOOT.—The horse, a native of extensive plains and steppes, is perfect in his structure, as adapted to these, his natural pasture grounds. When brought, however, into subjection, and running on our hard roads, his feet suffer from concussion. The value of the horse, so often impaired by lameness of the foot, has made that part an object of great interest; and I have it from an excellent professor of veterinary surgery to say, that he has never demonstrated the anatomy of the horse's foot without finding something new to admire. The weight and power of the animal require that he should have a foot in which strength and elasticity are combined. The elasticity is essentially necessary to prevent percussion in striking the ground; and it is attained here, through the united effect of the oblique position of the bones of the leg and foot—the yielding nature of the suspending ligament, and the expansibility of the crust or hoof. So much depends on the position of the pastern bones and coffin bone, that, judging by the length of these and their obliquity, it is impossible to say whether a horse goes easily, without mounting it. When the hoof is raised, it is smaller in its diameter, and the sole is concave; but when it bears on the ground it expands, the sole descends so as to become flatter; and this expansion of the hoof laterally is necessary to the play of the whole structure of the foot. Hence it happens that if the shoe be nailed in such a manner as to prevent the hoof expanding, the whole interior contrivance for mobility and elasticity is lost. The foot in trotting comes down solid, it consequently suffers percussion; and from the injury, it becomes inflamed and hot. From this inflammation is generated a variety of diseases, which at length destroy all the beautiful provision of the horse's foot for free and elastic motion. The subject is of such general interest, that I may venture on a little more detail. The elastic or suspending ligament spoken of above passes down from the back of the cannon bone, along all the bones to the lowest, the coffin bone; it yields and allows these bones to bend. Behind the ligament the great tendons run, and the most prolonged of these, that of the perforans muscle, is principally inserted into the coffin bone, having at the same time other attachments. Under the bones and tendon, at the sole of the foot, there is a soft elastic cushion; this cushion rests on the proper horny frog, that prominence of a triangular shape which is seen in the hollow of the sole. The soft elastic matter being pressed down, shifts a little backwards, so that it expands the heels, at the same time that it bears on the frog, and presses out the lateral part of the crust. We perceive that there is a necessity for the bottom of the hoof being hollow or concave — first to prevent the delicate apparatus of the foot from being bruised, and, secondly, that elasticity may be obtained by its descent. We see that the expansion of the hoof and the descent of the sole are necessary to the play of the internal apparatus of the foot. That there is a relation between the internal structure and the covering, whether it be the nail, or crust, or hoof, we can hardly doubt: and an unexpected proof of this offers itself in the horse. There are some very rare instances of a horse having digital extremities. According to Suetonius, there was such an animal in the stables of Cæsar; another was in the possession of Leo X.; and Geoffrey St. Hilaire, in addition to those, says that he has seen a horse with three toes on the fore-foot, and four on the hind-foot.* These instances of deviation in the natural structure of the bones were accompanied with a corresponding change in the coverings—the toes had nails, not hoofs. By these examples, it is made to appear still more distinctly, that there is a relation between the internal configuration of the toes and their coverings—that when there are five toes complete in their bones, they are provided with perfect nails—when two toes represent the whole, as in the cleft foot of the ruminant, there are appropriate horny coverings—and that when the bones are joined to form the pastern bones and coffin bone, there is a hoof or crust, as in the horse, couagga, zebra, and ass.—[Bell's Bridgewater Treatise.]

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* Such a horse was, not long since, exhibited in town, and at Newmarket.

THE BANKS OF NEWFOUNDLAND.—These banks extend over a space of forty thousand miles, and are from thirty to forty-five fathoms below the surface of the ocean. The shoals are inhabited by innumerable tribes of muscles and clams, to which it is a favorite residence, as they can easily bury their shells in the soft sand. They have enemies to contend with. The codfish resort to this coast to prey on them. They keep a constant watch, and swim about a foot above the sub-marine sands; when a muscle opens its shell, it is immediately seized and devoured. At other times the fish do not wait: they are provided with a horny protuberance round their mouths; with these they burrow in the sand, and capture the muscle in its shell. The fishermen of various nations, French, English, and Americans, who resort to these banks, take annually from eight to ten millions of fish; on opening them they find the remains of twenty or fifty muscles in each—sometimes the muscle-shells are found either wholly or partially dissolved. The first care of the fishermen, after taking their stations, is to ascertain the depth of water: the lines must be regulated so as to lie on the bottom, where the fish are always engaged in this species of sub-marine war.

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[FROM THE NEW-YORK AMERICAN.]

The author of the following lines is one deeply tried in the furnace of affliction, a young and interesting female, for nine wearisome years, the victim of excruciating, uncompromising disease, deprived of nature's sweet restorative, sleep—unless obtained by artificial means; and of most of those comforts which scarce serve to alleviate the sufferings of many more fortunate, tho' perhaps not more happy, who recline on beds of down—she is a christian.

In the restless watches of the night she composed many pieces of poetry, touching, from their strain of simple pathos, and extraordinary, as the productions of a secluded, self-educated girl, whose reading has been quite limited—her favorite author, Cowper. Unable to endure the fatigue of writing, she at some convenient time, perhaps after the lapse of weeks, dictated to an amanuensis, her aged and most venerable father, these effusions of her innocent mind. It was a beautiful sight to look upon. The poor girl, from her bed of suffering, repeated her verses line by line to the patient old man (now in his seventy-eighth year, and rapidly declining,) while he carefully listened to her words and committed them to paper. Strange to say, though quite hard of hearing when addressed by others, he caught every sound from the lips of his loved child of sorrow, though uttered in a low and plaintive voice. It is probable that a collection of her poems will ere long be published. The present one appeared in an eastern paper, but probably has not met the eye of many of your readers. L.

ODE TO THE POPPY.

Tho' varied wreaths of myriad hues,
As beams of mingling light,
Sparkle replete with pearly dews,
Waving their lucid leaves profuse,
To captivate the sight:
Tho' fragrance sweet exhaling blend
With the soft balmy air,
And gentle zephyrs, wafting wide,
Their spicy odors bear;
While to the eye,
Delightfully,
Each flowret laughing blooms,
And, o'er the field
Prolific, yields
Its incense of perfumes;
Yet, one alone o'er all the plain
With lingering eye I view;
Hasty I pass the brightest bower,
Heedless of each attractive flower,
Its brilliance to pursue.
No odors sweet proclaim the spot
Where its soft leaves unfold,
Nor mingled hues of beauty bright,
Charm and allure the captive sight,
With forms and tints untold;
One simple hue the plant portrays,
Of glowing radiance rare,
Fresh as the roseate morn displays,
And seeming sweet and fair;
But, pressing close, its nauseous breath
Disgusts the bright and gay,
And from the hand, with eager haste,
Is careless thrown away,
Unthinking that, in evil hour,
Disease may happiness devour,
And that fair form, elastic now,
To Misery's wand may hopeless bow.
But reason leads wan sorrow forth,
To seek the lonely flower,
And blest experience kindly proves
Its mitigating power.
Its own bright hue the sight can trace,
The brilliance of its bloom;
Tho' misery veil the weeping eyes,
Tho' sorrow choke the breath with sighs,
And life deplores its doom,
This fated flower,
In desperate hour,
A balsam mild shall yield;
When the sad sinking heart
Feels every aid depart,
And every gate of hope forever sealed,
Then shall its potent charm
Each agony disarm,
And its all healing power shall respite give.
The frantic sufferer then,
Convulsed and wild with pain,
Shall own the sovereign remedy and live.
The dews of slumber now
Pass o'er the aching brow,
And o'er the languid lids balsamic fall.
While fainting nature bears,
With dissipated fears,
The lowly accents of soft Somnus' call:
Then will affection twine
Around this magic flower,
And grateful memory keep
How in the arms of sleep
Affliction lost its power.

1825. C. T.

SONNET.—A VILLAGE TOMBSTONE.

Approach! thou visitant of gorgeous tombs,
And costly mausoleums, whose august
And sculptured massiveness bespeaks the dust
Beneath once noble,—*here* no statue glooms
Rebuke from its dark niche, nor earth resumes
Her own with ghastly pageantry: nor bust,
Nor aught of grandeur's dim heraldic trust,
Here flatters the poor clay that clay consumes.
Approach, and mark where last the soul hath heaved,
And trace one record of the lowly dead,—
"He lived—he died." What sculptor e'er achieved
More on rich marble, trusted not when read?
This simple stone speaks truth, and is believed.

Bishop Wearmouth. G * * * *.